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Greetings from Franklin D. Murphy, M.D., Dean, University of Kansas School of Medicine

Again the School of Medicine of the University of Kansas is indebted to the Kansas Medical Society and its Journal for the privilege of developing the annual medical school number. This issue is symbolic of the continuing strong bonds that tie the interests of the school to those of the medical society. The fact that there has been forged a close relationship between school and profession is a source of the greatest satisfaction to the university. The support given the administration of the school by the officers and council of the state society has been one of the major factors in making the continuing development of the school an exhilarating experience.

The School of Medicine bears the two major responsibilities of education and research. It is our avowed goal to expand the quantity and quality of both the undergraduate and postgraduate instruction, not only in medicine but also in the many ancillary fields such as nursing, physical medicine, laboratory technology, occupational therapy, hospital dietetics, etc. Educational programs are being modified as time, experience, and local needs dictate. A curriculum is not cast in concrete but should be a living, pliable thing, requiring as much experimental study as disease itself. As socio-economic as well as disease patterns change, so must educational techniques and directions also be modified, else they wither and become sterile.

No institution of higher learning, least of all a medical school, can hope to develop and maintain that academic ferment and buoyancy which characterize a great institution without well developed programs of research. Medical investigation is not incompatible with medical teaching. In fact the one complements the other. The best physician is the most inquisitive physician and this attitude is more easily developed in a medical environment where research is the rule rather than the exception. The medical school has fully recognized this obligation and this past year has seen substantial expansion of already existing investigative programs as well as the development of new research efforts in other directions. We are convinced that the people of Kansas are as interested in projects designed to explore the diseases of man as they are in the necessarily important researches into the cause and cure of diseases of domestic animals and grains, and we propose to bring this picture into proper balance by increasing our efforts at the medical school.

The actual as well as the proposed expansion of activities in both education and research brings increased demands on our faculty, and we are presently working toward a plan whereby those faculty members most concerned with these programs are able to devote more of their energies and skills to these efforts without undue sacrifice. Such a plan is essential if we are to realize our goals, and this is a fact that almost every medical school in the nation has realized by now. The combination of adequate financing, proper facilities, and a skilled faculty, many of whom will devote most or all of their energies to the school, represents the only mechanism whereby we can realize our potentialities with a distinction which will inevitably reflect credit on the medical profession and the people of our state.

Perhaps the most significant development in Kansas medicine in the past year has been the concerted effort by all concerned with health in our state to attack some of those problems in medical care which have been recognized by physician and layman alike. Kansas has a long tradition of sensible progressivism in the sense that when problems arose they were faced and solved by practical, honest action and with the knowledge that the privileges of democracy carry with them certain responsibilities in the public interest. Our Kansas forebearers also appeared to realize that if they defaulted on their responsibilities, they would lose their individual as well as group privileges. Therefore, it has been in the best Kansas tradition that the Kansas Medical Society through its council and its officers has taken the lead in demonstrating by positive action that the medical profession in Kansas recognizes its reponsibilities. The successful efforts of the Society on behalf of the medical school will soon be translated into more and better physicians for the people of our state. The unremitting backing and participation in the postgraduate programs can mean only better medical care in Kansas. Local communities have been awakened to their responsibilities. Through these and other efforts, the Kansas Medical Society is proving not only to the state but to the nation that the sense of local responsibility and action is not dead. The School of Medicine feels privileged to have participated in this plan of positive action under the tireless and vigorous leadership of the president of the Society, Dr. Haddon Peck. We look forward with zest and pleasure to a continuation of this fruitful and effective relationship.

Penicillin Treatment of Cardiovascular Syphilis*

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With the discovery and announcement by Mahoney in 1943, that penicillin is a potent agent against the spirochete of syphilis, a new era of syphilotherapy was ushered in. From then until now extensive study has been in progress pointed toward finding proper time-dosage schedules, particular indications, contraindications, and dangers in the treatment of syphilis. It seems apparent that these problems are especially great as they relate to the serious forms of late syphilis, and that in this respect the solution remains incomplete.

Our first objective in this study was to critically evaluate the effect of penicillin in the treatment of cardiovascular syphilis. This is, of course, an ambitious venture, the final outcome dependent upon a long peiod of clinical observations and eventual study of postmortem material in comparison with non treated and inadequately treated case material. Logically results should also be studied in parallel with those from cases treated with other anti-syphilitic agents. We next wished to verify or dispel from our own minds the theoretically propounded fears regarding the use of penicillin in cardiovascular syphilis. Finally we wished to test the most practical form of rapid treatment for an out-patient service utilizing an already proven spirochetocidal agent, exploring dosage, speed of treatment, and economy of treatment; and most important of all to find a schedule of therapy which would encourage the least absenteeism from treatment by the patients.

In considering any new therapy, it is well to clarify the features of the disease against which it is directed. We have, therefore, thought it worthwhile to present a brief review of observations in the recent literature on cardiovascular syphilis, as a part of this report.

Pathology

I. Aorta invaded by spirochetes before or during secondary stage.
   A. Lymphatics involved.
   B. Vasa Varorum involved—endarteritis.

II. Tissue changes.
   A. Destruction of muscle and elastic fibers of media.
      1. Weakening and dilatation of wall (aneurysm).
      2. Widening of aortic valve commissures (aortic insufficiency).
   B. Fibrosis with irregular thickening of intima (plaques).
      1. Encroachment upon the coronary ostia (coronary insufficiency).
      2. Thickening and contracture of the aortic valve cusps (aortic insufficiency).

III. Miscellaneous changes.
   A. Gumma of the myocardium.
      1. Heart block and other arrhythmias resulting.
   B. Syphilitic myocarditis.
   C. Increased myocardial susceptibility?[1]
      1. Miscellaneous infections involving myocardium.
      2. Atherosclerosis.

General Problems and Incidence

Pathological evidence of aortic involvement can be found in 80 to 90 per cent of inadequately treated syphilis of 10 years or greater duration.[2] While there is an average of 20 years elapsing between appearance of a primary lesion and of symptoms these features may be separated by no more than three to six months in occasional instances recorded. Approximately 10 per cent of syphilitics develop clinical evidence of aortic disease if not treated in the early stage.[3] These constitute 10 to 15 per cent of all cases of cardiovascular disease recognized clinically, and comprise 13 to 15 per cent of all cardiovascular lesions found at autopsy.[5] Cardiovascular syphilis is responsible for more adult deaths than is neurosyphilis.[4] Males dominate in most series. Woodruff reports 93 per cent males in his series.[5] Cardiovascular syphilis is largely a disease of late middle life. The majority are said to show symptoms and die after the age of 50 years.

Clinical Course and Prognosis

Syphilitic heart disease may first manifest itself by sudden death, or symptoms may be present for many years. The extreme variability of its course makes evaluation of treatments hazardous, except in large series of cases. Factors influencing prognosis warrant examination. The more important items are listed. (a) Physical exertion related to the patient's economic status. Obviously the patient required to engage in strenuous physical endeavor incurs further and more rapid damage. (b) The complications of hypertension and arteriosclerosis, of which there is a high coincidence. (c) Variables as represented by signs of the disease. Widening of the ascending aorta was said by Reader to have no especially ominous significance.[6] We have observed

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one female with an aneurysm of the ascending aorta, verified by x-ray, for 15 years. This patient has had ausculatory findings of aortic insufficiency for seven years. She is still symptom free. Still more remarkable is the fact that she has gone through two pregnancies in this period. (d) Treatment is a factor of much more importance when given early.

Estimates of life expectancy after the diagnosis or onset of symptoms have varied. Woodruff[5] found that 66 per cent of his patients were dead within two years after symptoms began. Moore's figures for untreated cases were: aortitis, average of 10 years; regurgitation, up to three years; aneurysm, up to two years. In a series of patients with aortic insufficiency reported upon by Reader and coworkers[6] in 1947, the prognosis was much more favorable. Most of their cases were over 60 years old and able to avoid heavy labor. In those given intensive bismuth and arsenic treatment as well as adequate supportive treatment for complications, the asymptomatic phase lasted two to 10 (average six) years, and the symptomatic phase ran two to 14 (average 5.6) years.

Diagnosis

Aortitis: Maynard,[7] Gross and Wallerstein,[8] and Woodruff[5] have all recently concluded that uncomplicated aortitis is a symptomless disease, and have re-evaluated the criteria formerly set up for its diagnosis. Physical signs usually mentioned are increased retromanubrial dullness, episternal pulsation, aortic systolic murmur and accentuated aortic second sound. The first is a relatively late finding; the others are significant only if the patient is under 40 years of age, without hypertension or arteriosclerosis. Radiographic signs usually mentioned are as follows: (a) Widening of the aorta, most significant in the ascending portion, less so elsewhere if the patient is over 40 or hypertension is present. From examination of 30,000 Army and Navy recruits, Schwedel, as quoted by Gross and Wallerstein, found that five per cent of healthy men between the ages of 17 and 37 years had some aortic dilatation. (b) Calcification in the ascending aorta is significant, especially if linear in distribution, such being only ocasionally found in the absence of syphilis.[9] Increased aortic density is of similar import. (c) The types of pulsation is thought characteristic by Griffith,[10] being a quick exaggerated expansion with a lazy recoil, unlike that found in other conditions. (d) Angiocardiography has recently been stated to be the final criterion of diagnosis in many doubtful cases.[3]

Aortic insufficiency: Symptoms were denied at the time of diagnosis by one-half of the cases studied by McDermott, as quoted by Moore.[2] Twenty-eight of these asymptomatic patients were followed two years or more, and only two died of heart disease. Two others developed symptoms. When symptoms do supervene, dyspnea and later other manifestations of the heart failure are classical. It has been recently emphasized that syphilitic cardiacs in failure respond to the administration of digitalis and diuretics about as well as do other cardiacs, contrary to older opinion.[3] Anginal pain may arise on the basis of ostial stenosis or relative myocardial ischemia in marked hypertrophy of the heart. Sixteen of 54 patients studied before and after death by Gross and Wallerstein had chest pain.[8] In only seven was it clearly due to aortitis; four had ostial stenosis. Reader[3] feels that pain in cardiovascular syphilis is likely caused by ostial stenosis only when aortic insufficiency is also present.

Physical findings: Chief among these is the aortic diastolic murmur, which is easily missed if not listened for correctly. It is transitory in early cases. The murmur is occasionally heard in severe hypertension, arteriosclerosis or anemia, but these are not often diagnostically important. When caused by rheumatic disease the murmur is usually associated with signs of mitral valvulitis, and it is first heard at a younger age. The Austin Flint murmur may be indistinguishable from that of mitral stenosis, even to the thrill. Differential points offered are (a) the usual absence of a loud sharp pulmonic second sound in syphilis, and (b) heart contour on percussion and fluoroscopy—boot shaped in syphilis, prominent conus in mitral stenosis. The Austin Flint murmur was noted in 46 per cent of cases where the murmur of aortic insufficiency was recorded, in the series studied by Woodruff.[5] Aortic insufficiency in healed bacterial endocarditis may be a fairly common entity in years to come. Occasional instances of bacterial endocarditis superimposed upon a luetic valve have been recorded. Rheumatism and syphilitic aortic insufficiency found at autopsy have been reported.[5]

Blood pressure: Gross and Wallerstein[8] found normal or elevated diastolic pressure in four of 54 proven cases studied. Twenty-four of varying severity had systolic hypertension (over 150 mm. Hg.), 11 had a diastolic pressure over 100 mm. Hg. Of the latter, eight had no clinical evidence of aortic insufficiency. The diagnosis was established at autopsy.

X-ray findings: A dilated ascending aorta may be seen, if saccular, it is said to be pathognomonic of syphilis.

Aneurysm: The symptoms of hoarseness, cough, pain, etc. are well known, but are often absent. Some symptoms may subside if periaortitis is resolved by treatment.

Physical signs: Retrosternal abnormal pulsations, distended veins, inequality of the radial pulse, and unequal pupils are features requiring differentiation from all other intrathorac disease states.

Radiographic findings are those of a mass which may be seen to pulsate. Pulsation is often absent in the saccular type of aortic dilatation, being prevented by thrombosis or periaortitis.[9] Small aneurysms unusually located are easily missed. Of 20 autopsied cases in one series, only 12 had been clinically detected.[8]

Miscellaneous diagnostic factors: History of a primary lesion is of considerable confirmatory value. Approximately one-third of Woodruff's cases had evidence of neurosyphilis. This was found in 19 of 41 of our cases upon whom spinal punctures were done.

Treatment

A number of studies have shown that adequate treatment of early syphilis is almost completely effective in preventing cardiovascular involvement.[7, 11, 12] Adequate treatment of established cardiovascular syphilis with arsenic and heavy metals has also been shown to improve the prognosis statistically. Figures from the Cooperative Clinic Study[10] report indicate that in untreated or inadequately treated patients survival times are as follows: aortitis ten years; aortic regurgitation up to three years, aneurysm up to two years. Adequate treatment increased these to: aortitis 10 to 20 years; regurgitation four and one-half years, and in aneurysm from three to six years.

There have been only three reported autopsy studies in which a comparison was made between cases adequately treated and cases having little or no treatment. One such study showed no difference. Two more recent series showed definite benefit from adequate treatment. Webster and Reader[13] studied a group of 19 cases adequately treated (20 arsenical and 20 bismuth injections or more). Of this group only three showed active inflammation in the aorta, while this was present in all of 19 cases with little or no treatment.

Material available in the pathology museum of the University of Kansas Medical Center uniformly shows perivascular round cell reaction in the aorta of all aortic syphilitic cases. This is true in both treated and untreated cases. It must, of course, be stated that in no case was treatment known to be adequate by present standards.

Treatment with penicillin: After coming into clinical usage penicillin was quickly proved to be a potent spirochetocidal agent, comparable to arsenicals. It was found at the same time to have the property of producing the Herxheimer reaction, in early and late syphilis. In neurosyphilis, the symptoms of this therapeutic shock were sometimes alarming. Initiation of treatment with small graduated doses was suggested, but has not prevented the fever and other phenomena of the Herxheimer reaction. It seems to occur when the concentration of penicillin reaches a therapeutic level in the body, coming on in a matter of a few hours thereafter. Theories of the underlying mechanism will not be discussed; suffice it to say that tissue changes appearing in syphilitic lesions apparently include edema and transient activation of the inflammatory process.

It has been feared this might allow disruption of a vital tissue under stress, as in the aorta, or produce harmful pressure effects from the edema, as around a coronary ostium. Arsenicals were long ago found capable of producing rapid healing and scar formation in syphilitic lesions where spirochetes were numerous. This gave rise to the idea that this series of events occurring in such vital structures as the aortic valve or coronary ostia might embarrass their functions. Such a theoretical untoward deviation has been called a "therapeutic paradox." With the feeling that the organism could adjust better to the changes of healing if they were made to take place more slowly (at least the undesirable sequelae would not evolve so dramatically), cautious preliminary treatment with heavy metals has been commonly practiced. It is difficult to dispute this on theoretic grounds.

When penicillin was found to be spirochetocidal, the concept of the therapeutic paradox was logically applied to it, in the absence of any known reason to the contrary. As recently as March, 1948, one could find recommendations such as that given by the Syphilis Study Section of the National Institute of Health,[14] that in syphilitic aortitis with aortic regurgitation, saccular aneurysm or obvious or masked coronary or myocardial disease, it might be advisable to withhold penicillin altogether, or at least till after preparatory treatment with heavy metals had been given. However, when penicillin became so widely used for all kinds of infections as well as early syphilis, it was inevitable that a number of cardiovascular syphilitics would be subjected to it, inadvertently or otherwise.

There have been a few scattered reports of suspected unfavorable reactions to penicillin by these patients; however, they are all largely circumstantial in nature, and subject to explanation by mere coincidence. In 1945, Dolkart and Schwemlein[15] reported two cases of penicillin treated aortitis, one of which had angina at rest on the third day of treatment and frequent ventricular prematurities on the fifth day. When treatment was stopped, the un-

toward symptoms subsided in two days. The second case had precordial pain appearing on the fourth day of penicillin therapy. The pain stopped one day later as treatment was discontinued. However, both cases previously had angina, and the second had severe lingual tonsillitis with an apparent bronchial infection at the time.

Scott and co-workers in January, 1949,[16] reported a ruptured aneurysm occurring 49 hours after starting penicillin therapy. The autopsy showed necrosis of the aortic wall where it was adherent to the esophagus. This patient also had menigococcic meningitis. The authors admit that the catastrophe and the penicillin treatment may have been purely coincidental. Callaway[17] reported a patient thought to have suffered a rupture of an aortic cusp 10 days after completion of penicillin therapy. Moore observed a patient with aortitis and paresis who died, apparently of congestive failure, after four days of penicillin and malaria treatment. At autopsy numerous aortic plaques with fresh hemorrhages in them were noted.

Kossman and Flaum[19] in 1948, reported upon penicillin treatment of 49 cardiovascular syphilitics. One patient had recurrent attacks of precordial pain during treatment. It is to be noted, however, that the patient was in congestive failure and complained of angina before treatment. Another had paroxysmal dyspnea during therapy, but had also been in congestive failure just prior to treatment. None of the remaining 47 patients had anything to suggest a treatment reaction. Eleven had had no previous treatment. Russek and others[20] in 1946, gave penicillin to 15 syphilitics with aortitis. One had mild chest pain for a few hours on the third day, subsiding on continued treatment. This patient as well as three others seemed to have improved coronary reserve after treatment.

In 1947, Tucker and Farmer[21] reported on the use of penicillin in 34 cases of syphilitic aortitis. Eleven of these had cardiac symptoms. Some had previously had heavy metals, but not within three months. All but six were started on full doses of penicillin. Five had temperature elevations within 16 hours. All of these had abnormal spinal fluid. Ten who were followed with daily electrocardiographic tracings showed no significant changes in the curves. There were no untoward cardiovascular reactions.

Edeiken and co-workers[22] at the University of Pennsylvania have recently reported on penicillin treatment of 50 cases of cardiovascular syphilis. Most of their cases had had no treatment for several years. In none was it necessary to stop treatment. No relation was found between the initial dose and occurrence of febrile reactions. Six patients were treated while in congestive failure with no untoward effect. There were no evidences of therapeutic paradox. A few cases showed minor T wave changes in the electrocardiogram during treatment. These were usually transient, and difficult to interpret either as to treatment reaction or benefit. In 1949 Reader[3] stated that he and most other syphilologists were now beginning treatment with full doses of penicillin and ignoring the possibility of reactions in cardiovascular syphilis.

Penicillin dosage and schedules: Since penicillin treatment of cardiovascular syphilis has so far been largely investigational, there has been no concerted expression of opinion on dosage schedules. Much more follow-up study will be necessary to establish the optimal amount of treatment. Total dosage in the University of Pennsylvania series[22] ranged from 1.2 to 9.6 million units, given as the aqueous preparation at two to three hour intervals. In presently reported series the popular procedure has been to use aqueous penicillin injections around the clock, but single daily injections of the depot types are now in wide use in treatment centers, for late as well as early syphilis. Serologic responses to the latter seem to be as satisfactory as to the former. Reader and his group at the New York Hospital are now giving a 14-day course of aqueous or procaine penicillin totalling about four million units, followed by 300,000 units of aqueous or procaine penicillin twice weekly for 10 weeks.[3] They base the latter practice on the work of Eagle in experimental syphilis, which indicated that continued levels of penicillin are not necessary for therapeutic results, and on their belief that a short course alone probably does not eradicate the deep seated infection in the aorta. Such a schedule loses the advantage of the single short course in case holding, an important one in handling clinic patients.

Report of Penicillin Treated Case Series

Methods of study: This report is based upon observations made during the treatment of 70 patients with penicillin at the University of Kansas Medical Center Out Patient Department. Data are taken from the regular clinic and hospital records and from work sheets kept in connection with treatment. Routine study included the following wherever possible. (1) Physical examination before and every two months following treatment for one year, then every three to six months. (2) Quantitative Kolmer and Kahn serologic tests before and after treatment, at the same interval as the physical examination. (3) Chest x-ray and fluoroscopy before treatment. This was repeated later in the majority of previously untreated patients, also in a number of old cases having received heavy metals in the past. (4) Electrocardiograms were taken with the

same regularity as x-rays. A number of previously untreated patients had serial electrocardiograms, including some immediately after their course of treatment. (5) Spinal fluid examinations were made before treatment.

Five of the 70 patients were treated in the hospital with aqueous penicillin in frequent doses. The remainder were treated in the Out Patient Clinic rapid treatment center with penicillin in oil. Practically all received a total of six million units, given as one injection of 600,000 units daily for six days, Sunday excepted, then 400,000 units daily for six more days. Four of the hospital patients received between 10 and 15 million units. The hospital patients were started on small graduated doses. All of the out-patients received full doses from the beginning. This included those who had had no previous treatment.

RESULTS. *Previously treated patients* (data are shown in Table I): Forty-seven patients had been treated previously with heavy metals. In the main their treatment had been sketchy and often years in the past. All had positive serology. These groups included 39 with aortitis, seven with aortic insufficiency. Of the latter seven, two had aortic aneurysms. One patient had an aortic aneurysm but no insufficiency. Ages ranged from 31 to 71 years. There were 26 males and 21 females. Eight were white, 39 were negro. Twenty-one had hypertension (systolic pressure 150 mm. Hg. or greater, diastolic 100 mm. Hg. or greater). Twenty-one had cardiac enlargement. Eleven had chest pain construed as anginal, and 20 complained of dyspnea at some time before treatment. Electrocardiograms were done in 23 cases, and repeated after treatment in six. Seventeen had abnormal electrocardiograms before treat-

TABLE I

DATA ON PREVIOUSLY TREATED CASES

	No. Cases	Ages	Sex M	Sex F	Race W	Race C	Ht. Enl.	Elev. B.P.	Ht. Sympt. Pain	Ht. Sympt. Dysp.	Abn. EKG (a)	EKG Chg. (b)	C-V Reac.
Aortitis	39	31—71	21	18	7	32	13	16	6	15	10	0	0
Aortic Insuff.	7(c)	35—59	5	2	1	6	7	5	5	4	6	1(d)	0
Aneurysm	1	36	0	1	0	1	1	0	0	1	1	?	0
Total	47		26	21	8	39	21	21	11	20	17	1	0

(a) EKG's in 23 cases only.
(b) Follow-up EKG's in six cases only.
(c) Includes two with aortic insufficiency and aneurysm.
(d) Far advanced case, no evidence of treatment reaction.

TABLE II

DATA ON CASES NOT PREVIOUSLY TREATED

	No. Cases	Ages	Sex M	Sex F	Race W	Race C	Ht. Enl.	Elev. B.P.	Ht. Sympt. Pain	Ht. Sympt. Dysp.	Abn. EKG (a)	EKG Chg. (b)	C-V Reac.
Aortitis	9	41—67	1	8	2	7	6	4	2	1	4	2(c)	1?(d)
Aortic Insuff.	11	35—67	7	4	6	5	8	6	5	10	9	1(e)	0
Aneurysm	3	42—70	1	2	0	3	3	2	1	3	3	0	0
Totals	23		9	14	8	15	17	12	8	14	16	3	1?

(a) One or more EKG's in 21 cases.
(b) Follow-up EKG's in 14 cases.
(c) Slight lowering of T waves 1½ and four months after treatment.
(d) Mild nocturnal dyspnea (?) two months after treatment.
(e) Far advanced case, no evidence of treatment reaction.

ment. One patient's tracings showed progressive damage after treatment. This was a severe cardiac cripple, diagnosed as having combined rheumatic and syphilitic heart disease. The patient's course had been steadily downhill before treatment. There were no patients who showed clinical evidence of untoward reactions during or after treatment.

Previously untreated patients (data are shown in Table II): Twenty-three patients had received no previous treatment for syphilis. This group included nine with simple aortitis, 11 with aortic insufficiency and three with aneurysm. All but one had positive serology. The exception was an advanced case of free aortic regurgitation difficult to conceive as being produced by any other cause than syphilis. Ages ranged from 35 to 70 years. Nine were males and 14 females, eight white and 15 negro. Twelve patients in this group had hypertension, 17 had cardiac enlargement. Eight patients complained of chest pain, and 14 had experienced dyspnea. Electrocardiograms were obtained on 21 before treatment, and after treatment 14 had one or more tracings made. Sixteen of these tracings revealed abnormalities before treatment.

Following treatment, two patients with aortitis had tracings with mild depression of the T waves. The clinical significance seemed equivocal. One of these patients claimed subjective improvement, the other noted no change. Electrocardiographic evidence of progressive damage four months after treatment was noted in one patient with severe aortic insufficiency. This patient was in failure before treatment, and ran a gradual downhill course later to die five months after treatment. There was no clinical evidence that penicillin affected him adversely. A few other patients with serial tracings showed transient minor variations in height of T waves and ST segments. These were as often "improved" as "worse" compared with pre-treatment electrocardiograms. There were no changes from upright to inverted T waves or vice versa. Clearly nothing definite could be concluded by following the electrocardiograms.

Clinical observations on the previously untreated patients were as follows (one patient who died later has been mentioned): One patient with aortitis and vague lower sternal aching was relieved following treatment. One 43-year-old colored female with a mild aortitis, a normal electrocardiogram, and no symptoms before treatment, complained of vague nocturnal dyspnea two months after treatment. There were no changes in physical findings. In subsequent visits the patient had no further complaints. One patient with advanced aortic insufficiency and congestive failure prior to treatment evidenced signs of failure on the last day of out-patient treatment. One patient in whom no murmur was heard before treatment was found to have a faint diastolic murmur two months following therapy. No other evidence of unfavorable effects was noted. It was thought likely that the murmur had been previously missed. Five of these patients were treated in the hospital with aqueous penicillin, where temperatures could be taken frequently. Two of the five showed transient mild elevations within 24 hours. Both patients had abnormal spinal fluid findings. Two patients developed mild fever on the fifth and ninth day of treatment, respectively. One patient manifested urticaria and joint pains, clearly a penicillin sensitivity reaction. It was not necessary to stop treatment in any case. One out-patient developed a serum sickness-like reaction on the eighth

TABLE III

PREVIOUSLY TREATED PATIENTS
SEROLOGIC FOLLOW-UP

	Totals Fol'd.	*Cases c. Fall in Titer*	Fol. 6 mo. or more	2+ titer over 6 mo.	*Last titer less than Pre-R*	
					Less than 6 mo.	*More than 6 mo.*
I. Cases with fall in titer	27					
A. Not fol. 6 mo.		10			(10)	
B. Fol. 6 mo. or more		17				
1. Only 1 titer			7			(7)
2. Initial fall and sec. rise			10			
a. Net fall				4		(4)
b. Last titer same or higher				6		
3. Steady fall, 2 or more titers				0	0	
II. No chg. or rise in titer	9					
A. Followed 6 mo.			5	(1)		
TOTALS	36	27	22	11	10	11

day of treatment, with no cardiac complications. One patient with an aneurysm of the ascending aorta showed definite congestive failure before treatment. The failure was thought to be more importantly the result of coronary arteriosclerosis. Response to digitalis and diuretics was excellent. Of added interest in this case was clubbing of the fingers of the right hand. Unexpectedly the clubbing decreased after penicillin treatment, but x-ray failed to show change in the aneurysm.

Serologic Follow-up

Data accumulated to the present are shown in Table III for previously treated patients and in Table IV for those with no previous treatment. Average follow-up time has been eight to nine months. It is seen that serologic titers show a definite tendency to decline, but this is variable among individuals.

Effect of neurosyphilis on serologic response: Forty-one patients had a spinal fluid examination. Of these, 19 had abnormal spinal fluids. Of the 19, 14 were followed six months. Six or 43 per cent had a net serologic improvement, as compared with a 50 per cent net improvement for the over-all six months group. The difference seems insignificant.

Discussion

For the patients followed six months or more, it will be seen that the per cent of serologic improvement was the same in those with and without previous treatment (50 per cent). This suggests that the great majority, if not all of the patients previously treated with heavy metals had active infection at the time penicillin was given, confirming the impression of the clinicians who ordered the treatment.

The extent of serologic response which is sustained without relapse may seem disappointingly low up to the present. Whether this indicates that the treatment given was inadequate, or that there is a long period of fluctuating titers before maximum sustained response becomes manifest, remains to be shown. The experience of Stokes and his group[23] with neurosyphilis suggests that the latter is a possibility. In 1948, they reported the blood serologic response found in a three year follow-up on penicillin treated neurosyphilitics. In that study, (averaging the yearly results for three years) 76 per cent remained unimproved or worse in blood titer, while 74 per cent showed striking improvement in the spinal fluid. On the other hand, the ratio of failure to marked improvement in the blood was progressively lowered each year: first year, 4.5 to 1; second year, 3 to 1; and third year, 2.5 to 1. (They recorded anything less than striking improvement in serology as failure; our figures are based on all degrees of improvement). Their results indicate a delayed good effect on the serologic titer.

At present, we feel that further treatment may be indicated in a number of these patients. Until a large number of cases are followed to autopsy such decision will have to be made on extended clinical and serologic follow-up. One should bear in mind that, in cardiovascular syphilis, serologic fastness to any amount of treatment has always been common. Therefore, it need not be considered final evidence against the effectiveness of penicillin.

In gaining cooperation of patients the short course of penicillin has far outdone the older routines. For this reason most of all, it will be our method of choice until a more effective agent is discovered.

Summary

1. The general problem of cardiovascular syphilis

TABLE IV

PATIENTS WITH NO PREVIOUS TREATMENT
SEROLOGIC FOLLOW-UP

	Totals Fol'd.	*Cases c. Fall in Titer*	Fol. 6 mo. or more	2+ titer over 6 mo.	*Last titer less than Pre-R*	
					Less than 6 mo.	*More than 6 mo.*
I. Cases with fall in titer	11					
A. No. fol. 6 mo.		5			(5)	
B. Fol. 6 mo. or more		6				
1. Initial fall and sec. rise			4			
a. Net fall				2		(2)
b. Last titer same or higher				2		
2. Initial rise but net fall			1	(1)		(1)
3. Sustained fall			1	(1)		(1)
II. No ch. or rise in titer	6					
A. Fol. 6 mo. or more			2	(2)		
TOTALS	17	11	8	8	5	4

and its treatment have been reviewed.

2. Report is made of penicillin treatment in 70 cases of cardiovascular syphilis, 47 previously treated with metals, and 23 with no previous treatment. A preliminary report of serologic follow-up is submitted, covering 36 patients previously treated, of whom 22 were followed six months or more, and 17 patients not previously treated, of whom eight were followed six months or more. Response was essentially the same in the two series.

3. Serologic responses to penicillin in the dosage schedule used by us at present are not striking in the length of time they have been followed. They show a tendency to improve, but also a strong tendency to "relapse." The optimal amount of treatment has not yet been determined.

4. Penicillin treatment of cardiovascular syphilis appears to be a safe procedure, without the necessity of previous preparation with heavy metals or iodides. The theoretic dangers of therapeutic shock and therapeutic paradox are not clinically important enough to warrant delaying its use in any case.

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COMMITTEE CHAIRMEN FOR 1950 MEETING

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The Present Status of Radioactive Isotopes in Medicine

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The purpose of this paper is to present briefly some of the fundamental facts about radioactive isotopes, to review those clinical applications which have been fairly well-explored, and to point out their possibilities and limitations.

In the last few years a new, powerful tool has appeared in medical and biological research. With the development of first the cyclotron by Lawrence and others[1] and later the atomic pile by the Manhattan Project[2] during the war, the dream of the medieval alchemist for the transmutation of elements has become a reality. A host of radioactive elements is now available for clinical or research purposes. The radioactive atoms can be readily distinguished from other atoms of the same element by the fact that they give off radiation of one type or another during their lives. This radiation can be detected by means of a number of well-developed instruments, of which the Geiger-Müller counter is perhaps the best known. Thus, when radioactive phosphorus (P^{32}) is fed to an animal, one can determine in which organs the "tagged" atoms appear, how long they stay there, and often in what chemical combinations they exist. The uptake of P^{32} is a good index of the relative phosphorus metabolism of an organ. Bone marrow, the organ of highest phosphorus metabolism, will take up the highest percentage of radioactive phosphorus.

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Theory

There are a number of particles in nuclear physics which are of fundamental importance. Only the three most often referred to can be discussed here. These are the alpha particles, beta particles and gamma rays.

Beta particles are the simplest of all particles. They are electrons which originate in the nuclei of radioactive atoms. One electron weighs only about 1/7440th as much as a helium nucleus, or alpha particle. The beta particle is symbolized as: β or e.

Alpha particles are the nuclei of helium atoms. Helium has an atomic weight of four, with two positive charges on the nucleus and two electrons outside the nucleus. Thus, when a helium atom loses the two electrons outside the nucleus, the resultant "alpha particle" has a charge of $+2$ and a "mass" (atomic weight) of four. In the language of nuclear physics one symbolizes an alpha particle: α or $_2He^4$ or simply He^4. Hence, the radioactive isotope of phosphorus, with atomic weight of 32

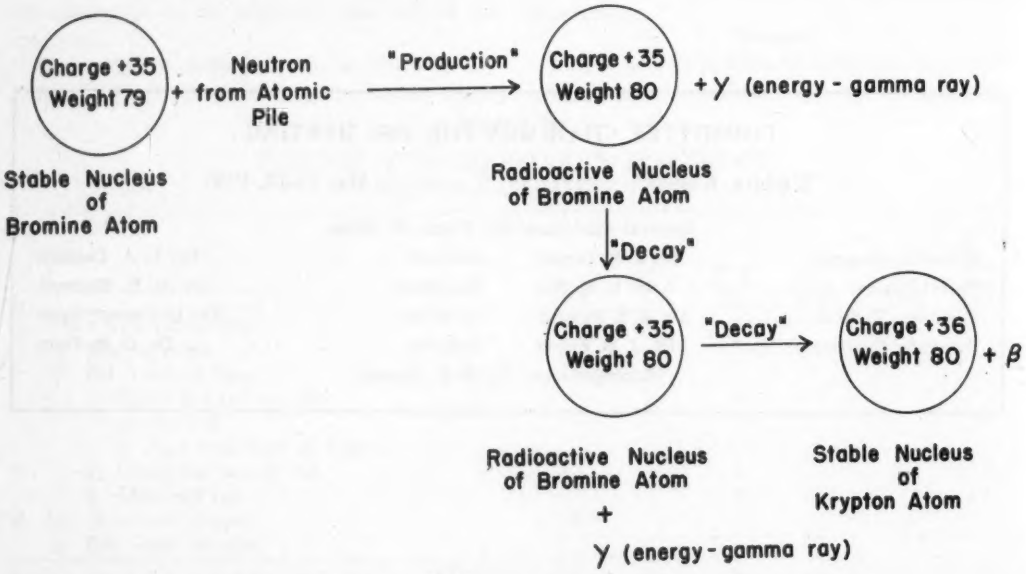

Figure 1. Production of radioactive bromine atom (Br^{80}) and it s subsequent decay to a stable atom of krypton (Kr^{80}).

and 15 positive charge on the nucleus is written P^{32} or $_{15}P^{32}$

The charge on the nucleus determines the identity of an element. One symbolizes the three isotopes of hydrogen as: H^1, H^2, and H^3 corresponding to the nuclei of ordinary hydrogen, "heavy" hydrogen (deuterium), and radioactive hydrogen (tritium), all with a single charge on the nucleus.

When the nucleus of an element, such as P^{32}, gives off a beta particle, it loses one negative charge, which is equivalent to gaining one positive charge. Because the charge on the nucleus determines the identity of the element, phosphorus changes into its neighbor on the periodic chart, sulphur, which differs from it by one charge on the nucleus. Thus, we write in symbols: $P^{32} \longrightarrow \beta + S^{32}$.

The radioactive atoms usually change to stable atoms after the radiation is given off. That is, the radioactive substance "decays" and after a time, depending on the isotope involved, the intensity of radiation from any given source will be appreciably diminished. The time required for half the atoms to "decay" is defined as the "half life" of the given isotope.

Gamma rays are electromagnetic radiation (energy), similar to x-rays and light except in their wave length. Since gamma rays are not particulate in nature, as are alpha and beta particles, an atom whose nucleus gives off only gamma rays remains chemically the same atom. No appreciable change in mass is apparent. Thus, we may write for the emission of gamma rays from Indium:

$$In^{115} \longrightarrow \gamma + In^{115}$$

Often gamma rays and beta particles are emitted in combination with each other as in the case of radioactive bromine, (Br^{80}). The decay of Br^{80}, which may give one gamma ray and one beta particle may be represented as

$$Br^{80} \longrightarrow \gamma + Br^{80}$$
$$Br^{80} \longrightarrow \beta + Kr^{80}$$

Figure 1 represents the production of a radioactive bromine nucleus, and its decay to a stable krypton nucleus.

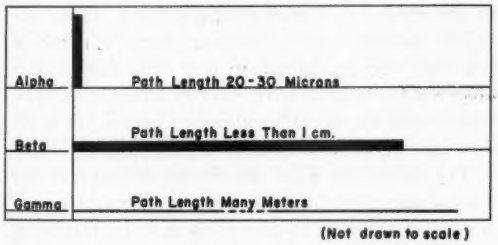

Figure 2. Path lengths and density of ionization in tissue of alphas, betas and gammas of the same energy. Length of figure proportional to range of particle. Height of figure proportional to density of ionization.

An important fundamental difference in the behavior of alpha particles, beta particles and gamma rays is in the length of their paths and the density of their ionization. Figure 2 represents the path length and density of ion production in tissue of the three types of radiation. It is apparent that beta particles have a tremendous advantage over gamma rays because if they are released approximately at the site where radiation is desired, they radiate only the immediate vicinity. Figure 1 represents particles of the same energy. Of course a beta particle of lower energy will have a shorter path length than one of higher energy. Thus the beta particles from tritium, H^3 (radioactive hydrogen) are so weak that their path in tissue is only a few microns. If tritium is concentrated in a cell, its radiation would be so localized that it would probably kill only that cell, or at most a few neighboring cells.

Applications

There are three main uses for radioactive isotopes in medicine. These are therapy, diagnosis and research. For radiation therapy, the radioactive isotopes present a theoretical advantage over the classical methods of x-ray and radium therapy. The particular isotope may be selectively taken up by certain organs, as P^{32} is taken up by bone marrow. This concentrates radiation at the particular site which one wishes to radiate. With the classical method, all normal tissue which lies in the path of the x-rays must be exposed to radiation. For research, the radioactive atoms have the advantage that they can be distinguished from all other atoms of the same element in the organism.

In diagnosis, the radioactive isotope is administered and its uptake by particular organs may indicate relative metabolic activity or lack of activity of the organ in question with respect to the meta-

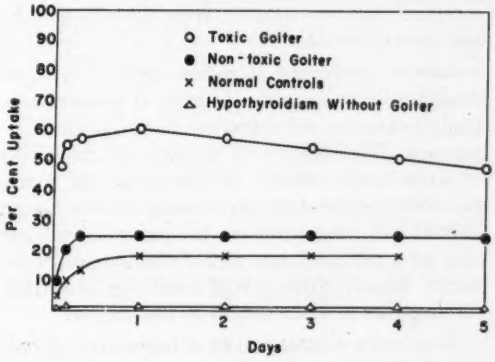

Figure 3. Uptake of I^{131} by the thyroids of normal persons and of patients with various types of goiters (after Hamilton, Soley, Reilly and Eichorn, The American Journal of Diseases of Children, 1943).

bolism of the element used. For example, small amounts of radioactive iodine given to a patient previously kept for a time on an iodine-free diet may be taken up by the thyroid in three fairly distinct manners. The manner of uptake depends upon the activity of the thyroid, that is, a normal, decreased, or increased thyroid activity.

Figure 3 shows the uptake of I^{131} as a function of time[3] in a series of 11 patients showing these different degrees of thyroid function. The uptake is measured by the counts per minute recorded on an externally situated Geiger counter. Here we have a new method of determining thyroid activity which is simple to administer, harmless, and which probably is uninfluenced by the emotional state of the patient, in contradistinction to conventional measurements of basal metabolic rates.

The excretion of I^{131} in the urine is also followed during the tests. The curves of excretion as a function of time in the four classes of normal, hyperthyroid, hypothyroid, and carcinoma patients are shown in Figure 4.[4] The four main types of curve

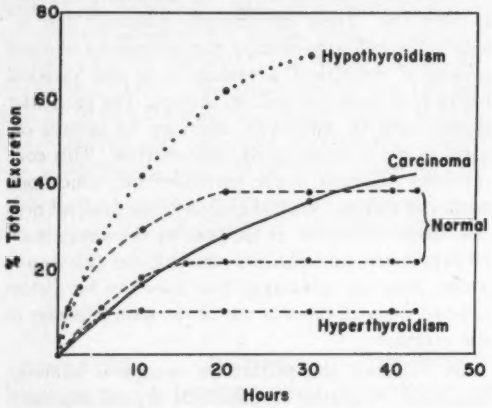

Figure 4. Total urinary excretion of tracer doses of radioactive iodine in normal and principal abnormal thyroid types (after Hayden and Corrigan, Harper Hospital Bulletin, 1948).

correspond to the classes as determined by the uptake by the thyroid.

Another interesting diagnostic application of radio-iodine is its use in the diagnosis of brain tumors. Diidofluorescein, incorporating I^{131} is given intravenously. This compound is taken up specifically in some brain tumors.[5] By measuring the counts per minute recorded on an externally situated Geiger counter at various points on the patient's head, one may get a fairly accurate idea of the location of the tumor. Moore[6] claims a high percentage of successful diagnoses of brain tumors by this method.

Some other diagnostic uses of radioactive isotopes include diagnosis of malignant breast tumors, the measurement of circulation time and the measurement of blood volume.

Low-Beer and associates[7] have used P^{32} for the study of breast tumors, and believe that the uptake of P^{32} is appreciably higher in most malignant breast tumors as compared with non-malignant tumors. Radioactive phosphorus in the form of sodium phosphate is given intravenously, and the counts per minute recorded by a Geiger counter at various points on the surface of the breast.

Hubbard, Preston and Ross[8] and others have used radioactive sodium (Na^{24}) as a measure of circulation time. The radioactive sodium in the form of sodium chloride is injected intravenously into one arm, and a Geiger counter placed over the opposite hand. A sudden increase in the counting rate indicates the circulation time. The method has the advantage that it does not depend upon subjective reactions of the patients, as do methods depending on taste, and that it is harmless. Use of potassium cyanide for measurement of circulation time has the disadvantage that it is difficult to adjust the dosage in children. The method using Na^{24} is useful in studying circulatory impairment[9] in Raynaud's disease, gangrene, and other vascular diseases.

Radioactive erythrocytes incorporating P^{32} have been used[10] to determine blood volume. They have the advantage that they do not leak out into the tissue spaces as do some of the dyes.

Some therapeutic applications of radioactive isotopes are the use of I^{131} in treating thyroid malignancies[11] or hyperthyroidism,[12, 13] use of P^{32} in treating leukemia and polycythemia,[14] the direct infiltration of tumors by various radioactive substances, and the use of needles containing long-lived gamma emitters, such as radioactive cobalt to supplant radium in the treatment of such neoplasms as cancer of the uterus.

Lawrence[15] recently reported on the treatment of 121 polycythemia patients. He believes that the present outlook for polycythemia vera patients properly treated with P^{32} is as good as that of diabetic patients on insulin. The P^{32} may be administered intravenously in the form of chromic phosphate. It is specifically taken up by the phagocytes of the bone marrow, spleen and liver. Thus the P^{32}, a pure beta particle emitter, is concentrated to a certain extent in the regions of hematopoietic activity. These energetic particles have a maximum range in tissue of less than one centimeter, so that little radiation is observed far from specific sites of localization. The dosage must be carefully controlled because an overdose may result in anemia or thrombopenia.

The above is a brief description of some of the clinical uses of radioactive isotopes. Routine use of several of these techniques is soon to be started at the University of Kansas Medical Center. Both clinical and laboratory research will also be carried out. Although use of radioactive isotopes in clin-

ical work has accomplished and will accomplish much good and although some of these techniques are taking a permanent place in clinical medicine, it is important to emphasize that they also have certain definite limitations.

First, isotopes can and should be used only under the careful supervision of workers with a great deal of training and experience in both the practical and theoretical aspects of the problem. Second, much of the clinical use has been of a strictly palliative nature. More important than finding new methods to irradiate tumors will be the exploitation to the fullest extent of the third main use for radioactive isotopes, which is the study of fundamental physical and chemical changes in the normal and malignant cell or the normal and pathological organism.

If we knew the chemical nature of malignancy, we might be able to use more fundamental and less empirical methods of treating it. One of the most fascinating and least-explored approaches is the search for an organic compound that localizes to a high degree in malignant cells but not in normal cells. If such a compound could be found it might then be labeled in a stable position with tritium (H^3) because its radiation is ideal for selective radiation. The beta particles could then have their lethal effect only on malignant cells. Tritium has other properties which makes it intriguing for this purpose. It is probably the cheapest of all isotopes. It is available in almost unlimited quantities, since it is a by-product of the atomic pile. It has a rapid rate of excretion[16] once it is catabolized to a simple form, such as hydrogen ion or water. It is apparent that such a compound, if found, might be made radioactive with H^3, administered in appropriate doses, and malignant growths, however remote anatomically, might be killed. However, such a compound, either set free or catabolized, would be rapidly excreted and long irradiation of normal tissues would be avoided.

Two good examples of how research with both radioactive and non-radioactive isotopes have modified our classical ideas are the new concepts of the first stages of photosynthesis and the discovery of the dynamic role of fat in the living organism.

It had long been thought that the first step in photosynthesis was a combination of carbon dioxide with water to give formaldehyde. However, when carbon dioxide containing radioactive carbon was fed to a plant[17] the first step was found to be a combination of carbon dioxide with a large molecule to form a carboxyl group. Oleic acid labeled with heavy hydrogen (H^2, deuterium) and fed to an animal on a low-fat diet appeared to a marked extent in the fat depots of the animal.[18] The popular idea that fat deposits are static must be revised. In mice, this so-called fat depot actually is about 50 per cent broken down and resynthesized in five to nine days.

Summary and Conclusion

Although the clinical uses of radioactive isotopes are important, they have a much more basic and essential role in research. It is to be hoped that doctors will familiarize themselves with the possibilities and limitations of these new tools, and that they will take full advantage of clinical applications. It will become possible for any informed doctor in medical practice to have these materials used on his patients under the supervision of doctors constantly working with these special techniques. The future of medicine lies in an ever-changing, forward-looking attitude. It is to be hoped that the tools of the physical sciences will be increasingly used.

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Compound Injuries of the Hand Due to the Mechanical Corn Picker

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Manual workers and farmers because of the nature of their work are prone to injure their hands. Of the many accidents in industry over one-third are to the hand![1] Compound injury to the hand caused by the mechanical corn picker is presented because of its particular regional interest. The type of injury is predominately damage to the soft tissue and covering skin, although nerves, tendons, and bones may be involved. Because of the economic losses from such crippling injuries and because of the complexity of structures damaged, basic principles of treatment should be understood and followed.

Protection of the Open Wound

Since this injury must be cared for promptly and definitively, and because the injured farmer has been working under grossly dirty circumstances, the earliest care should be simple and prophylactic in the avoidance of further mechanical, chemical, or bacterial injury.[3] The wound should be adequately exposed by cutting away covering clothing, and then be covered with a sterile dressing. Hemorrhage is usually adequately controlled by a pressure bandage, a tourniquet being rarely necessary. The injured member is then immobilized by a simple splint if definitive surgical treatment is to be given at some distance. The wound should be protected but left alone. Thereafter, the care is the surgeon's responsibility.

Determination of the Extent of Injury

On arrival at the hospital, a brief examination of the hand will give an estimation of the loss of sensory innervation and of tendon disruption. X-rays taken in anteroposterior and lateral oblique positions are useful. Further evaluation and examination can best be accomplished under anesthesia in the operating room. Compound injuries are often more serious and extensive than suspected.[2] A bloodless operative site under a tourniquet is a necessity for the determination of the extent of the injury. General anesthesia is better than regional block because the tourniquet will be better tolerated and because the direct application of a pedicled graft from the trunk may be necessary.

Time Factor From Accident to Operation

The optimum time for operative repair is the early hours before the contaminated wound becomes an infected wound. All open wounds are contaminated and especially these wounds. If repair can be done before bacteria multiply, closure can be accomplished with greater safety. Six hours has been considered the orthodox time limit. Wounds differ, however, in their degree and type of tissue injury and in the virulence of the bacteria present. A time limit is therefore relative. Closures of wounds have been uncomplicated up to 12 or even 24 hours after the accident but beyond this time the chances of severe infection following closure are great.

Preparation of the Wound

Meticulous attention to cleanliness is of first importance. The skin around the undisturbed sterile dressings is carefully washed with bland white soap and sterile water. Any grease present is removed with ether or benzine. The skin is prepared further with a suitable antiseptic solution up to the wound edge. The wound itself is then exposed and is lavaged with copious quantities of sterile saline solution to remove all foreign material. No chemicals are ever applied to the open wound.

Debridement

By nature of the crushing and moving forces, mechanical injury produces necrosis of tissue. Dead tissues should be excised but because the hand contains so many important structures, debridement should be conservative. Obviously dead muscle should be removed because of the danger of anaerobic infections, chiefly gas gangrene and tetanus. Devitalized muscle appears brown, gray, or blue, does not bleed, and does not contract when stroked or cut. Excision of the intrinsic muscles of the hand should not be done in the radical manner of debridement of less vascular tissues such as the buttocks, back or thighs. When incisions are needed for more exposure of parts of the damaged hand they should be made in the lines of skin wrinkles and never at right angles to the flexion creases.

Wound Coverage

After the cleansing and debridement, the plan to be executed at once is to transform the open contaminated wound into a clean closed wound.[4] Severe crushing wounds are not susceptible to immediate repair of deeper structures.[6] An infected or potentially infected wound should never be closed but, in general, wounds of the hands should be

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closed as soon as it is safe to do so. Wounds that are seen early enough and that can be cleansed and debrided should have immediate coverage. If the skin and subcutaneous tissues have been destroyed but there is viable underlying areolar tissue, a split skin graft should be applied.

This procedure is rarely possible with such injuries as are produced by the corn picker because of the deeper damage. When tendons, bones, nerves, or joints are exposed, early coverage for protection is mandatory and should be accomplished by a pedicle graft. Such a procedure means longer hospitalization and inconvenience, but the salvage of these structures is important. To leave these tissues uncovered means necrosis and further irreparable damage. At first glance, the impulse of the surgeon is to amputate the severely injured member. It is easy to cut off and throw away tissue, but it is difficult to salvage it for future usefulness. Whenever possible, length and function of the mangled hand should be preserved. The salvaged remains of a hand are usually better functionally than the best of mechanical devices.

If a flap (pedicled graft) is necessary to cover the hand's vital structures, the opposite side of the abdomen is usually the best donor site. Flaps include the skin, fat, and fascia down to the first cleavage plane along which runs most of the blood supply. They may be based superiorly or inferiorly but rarely laterally. The base should be wide so that the length and width are roughly equal in size. The donor bed on the abdomen may be closed but, if this cannot be readily accomplished, a split skin graft will cover the opened area adequately.

The arm and hand are held firmly to the abdominal wall with adhesive tape or a plaster of Paris cast. When the blood supply has been established between the abdomen and hand, a process which takes an average of between 18 and 21 days, the base of the flap can be sectioned under local anesthesia. The excessive margins of the flap on the hand should not be revised for a few weeks. The excessive fat in the flap can be excised later if it is unsightly. The fat of the flap gives a soft pliable substance for tendons denuded of paratenon to glide through as well as a good protective covering for bone, nerve or joint. It also provides a suitable operative site if future deep reconstructive surgery is necessary.

Value of Penicillin and Antiseptics

Penicillin will not prevent infection in poorly treated surgical wounds. Cleansing debridement and wound closure cannot be minimized. Mason[6] reviewed a series of hand injuries before and after the use of penicillin. He concluded that early and adequate surgery alone produced results as good as the results when penicillin was added to the treatment. Yet, penicillin should be given for added prevention of severe infection. Strong skin chemical antiseptics in wounds do not safeguard the patient against infections. They can only do harm by further damaging open tissues. Tetanus is best prevented by leaving behind no necrotic tissue or foreign bodies, but further precautions should be taken by the giving of T.A.T., 1500 to 3000 U. intramuscularly after a negative skin test of the serum diluted 1:10 in saline. The dosage with skin test is repeated before subsequent operations on the hand. If tetanus toxoid immunization has been given previously within one year, a booster dose of one cc. of toxoid is recommended.

Immobilization and Compression

The use of bulky compression bandages and splints put the hand at rest to allow early healing.

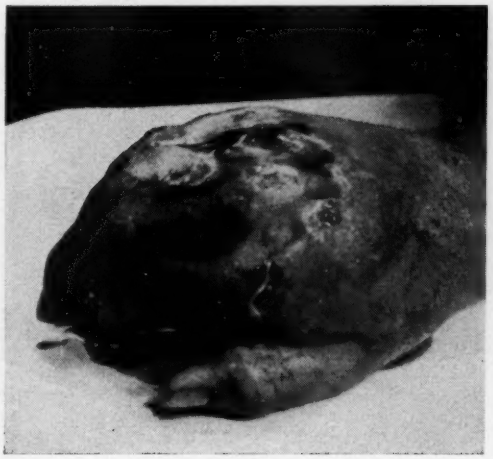

Figure 1 A. Case 1. Gangrenous fingers of right hand, dorsal view.

Figure 1 B. Case 1. Palmar view shows extensive laceration which apparently destroyed the circulation.

By their use, soft tissue infection subsides more readily, venous congestion and edema are lessened,[5] and the patient is more comfortable. Paralyzed groups of muscles are protected from the pull of uninjured antagonistic ones. Yet, fingers should never be rigidly fixed in one position for more than two and a half weeks for fear of tendon fixation in

Figure 2. Case 1. Attached left upper quadrant pedicle to stump of hand. Base of flap sectioned over one-half way through at 18 days, complete section 22 days. Note nearly hairless skin and skin graft in flap donor bed.

tendon sheaths, joint capsule shortening, or perhaps intra-articular adhesions. The fingers should be passively put through their range of motion without much pressure daily after the 18 days.

Functional Restoration

Early wound closure minimizes deep cicatrization and thereby saves time and function. Severe hand injuries should be immobilized in the position of function at the time of repair.[7] This means the thumb in the position of opposition (vertically away from the palm in the pronated outstretched position), the fingers flexed 15 to 30 degrees in each joint to assume the grasping position, and the wrist somewhat dorsiflexed. When good healing is reasonably assured, finger motion should be allowed and continued daily.

Case Reports

Case 1. R. M., white male, age 18 years, admitted to the University of Kansas Medical Center on November 13, 1949, corn picker injury 10 days previously. X-rays negative for fractures but all fingers gangrenous except thumb (Figure 1, A and B). After three days of continuous wet dressings, the fingers were amputated just distal to the metacarpophalangeal joints. An abdominal flap (Figure 2) was applied to the open stump five days later. The delay was felt necessary to allow further wet dressings for open surgical drainage because the wound was quite dirty and suppurating. The flap was sectioned completely 22 days after application and the free open end simply draped over the stump. About one month later, on January 18, 1950, the flap was revised and the free tissue shaped in thin conical projection with its long axis in line with the third metacarpal. Later a bone graft can be affixed to the third metacarpal stump in the pedicle to give the semblance of a rigid finger to which the thumb can be opposed to allow grasping function.

Case 2. R. F., white male, age 25 years, admitted to the University of Kansas Medical Center on October 29, 1948, five and one-half hours after injuring his left hand in a corn picker (Figure 4, A and B). Although only the base of the index finger proximal

Figure 3 A. Case 1. Dorsal view of reshaped flap. Semblance of finger is present.

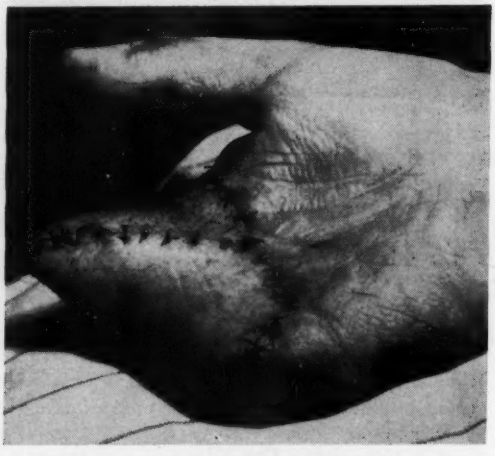

Figure 3 B. Case 1. Suture line of revision shown on volar side. A bone graft will give rigidity desired later.

Figure 4 A. Case 2. Palmar laceration. Severe deep injuries.

Figure 4 B. Case 2. Dorsum has much skin loss as well as deep injury. Note demarcation of dead skin.

phalanx was fractured, the soft tissues of both volar and dorsal sides were very seriously damaged. All tendons were shredded but not broken. All intrinsic muscles were badly ground up and dirty, containing grease, dirt and cornshucks. The digital vessels were intact but in marked spasm. The digital nerves were avulsed to the little finger and one side severed to the index finger.

Some palmar skin (Figure 4 A) was missing but most of the skin of the dorsum (Figure 4 B) was so damaged it had to be excised, exposing tendons and bones. Cleansing debridement was carried out, much of the necrotic muscle having to be removed, as well as all sublimus tendons. A large abdominal flap (Figure 5) based inferiorly was applied to the hand. The volar laceration was loosely closed with a drain placed in one corner. A split skin graft covered the donor bed. Stellate ganglion blocks with Duracaine were given for three days to improve the poor circulation of the hand. T.A.T. 1500 U. was given immediately. A large dose of penicillin was administered for 17 days. A partial section of the base of the flap was done at 18 days and the flap was completely severed at 22 days.

Figure 5. Case 2. Abdominal flap to dorsum just before complete sectioning of base.

The palmar wound healed (Figure 6 A) but there was so much scarring with incorporation of the profundus tendons that the fingers had very little motion. The fingers, also, were clumped together because of the loss of the intrinsic muscles. To gain more motion, the scar of the palm was excised and the tendons freed. One foot of a previously prepared bipedicled abdominal tube was applied to the bared palm allowing loose fat to surround the tendons. This graft was sectioned at 15 days. The free end was later revised (Figure 6 B). The flap on the dorsum (Figure 7) has been revised and defatted. The hand is a useful one now although full extension and flexion of the fingers are definitely limited. The patient can pick up small objects or use his hand for hard farm labor. Release of the tendons allowed 30 degrees more motion of the fingers. No tendon transplants are advisable due to joint capsular fixation.

Case 3. F. B., white male, age 23 years, admitted to Wadsworth Veterans' Hospital, Leavenworth, Kansas, on November 17, 1949, three weeks after his right hand had been injured in a corn picker. The index, middle and ring fingers had been so badly damaged that the patient's local physician had amputated the three fingers (Figure 8, three weeks after admission). On November 23, the exposed dead proximal phalanx of the little finger was removed, the bone being black and necrotic. An ab-

Figure 6 A. Case 2. Dense palmar scar with all flexor tendons densely adherent to it.

Figure 6 B. Case 2. After excision of the scar and application of another pedicle graft (bipedicled tube) from the abdomen. The freed fingers give a much more useful hand.

Figure 7. Case 2. Abdominal flap on dorsum gives good coverage. Has since been revised and defatted.

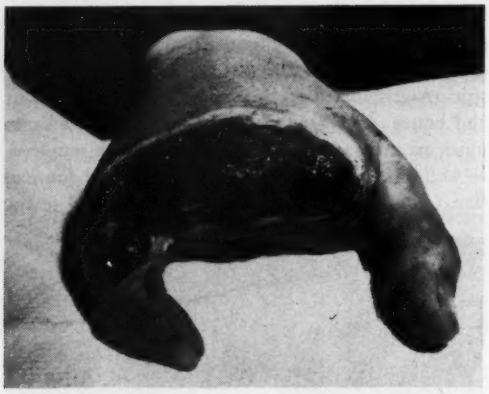

Figure 8. Case 3. Granulating stump of hand immediately before application of abdominal flap.

dominal flap from the hairless left upper quadrant was applied on December 2, a dermatone graft being applied to the donor bed. The flap was kept attached to the hand longer than usual, the base not being finally sectioned until January 4, 1950. The free margin of the flap had not been revised by February 1 but can be done soon after that. One or two metacarpals of the amputated fingers will be removed to collapse the hand and bring the little finger near the thumb for a grasping function. This finger minus its proximal phalanx will have to be fixed in position. It has no active motion.

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Subacute Bacterial Endocarditis Due to Streptococcus Fecalis: Failure of Massive Prolonged Penicillin Treatment, a Case Report with Autopsy*

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The successful treatment of subacute bacterial endocarditis with penicillin in recent years is well known.[1] Fortunately, most infections are caused by penicillin-sensitive species of streptococci, particularly Streptococcus viridans.[2] Although the recovery rate from this disease is now reported to be 60 to 80 per cent by various investigators, there remains an important group of patients in whom the disease still is fatal.

The causative agent in many of these penicillin-resistant infections is the Streptococcus fecalis, or enterococcus.[2,3] Only recently have there been a few reports of recovery from subacute bacterial endocarditis due to Str. fecalis; most of these patients have necessarily been treated with massive doses of penicillin for prolonged periods, some in conjunction with one or more courses of streptomycin.

MacNeal, Blevins, and Poindexter[3] have reported recovery from enterococcus endocarditis in a patient treated with thiobismol, specific enterococcus bacteriophage, neo-arsphenamine, and penicillin. Leaman et al.[4] have recently reported recovery from Str. fecalis endocarditis in a patient treated intensively with penicillin and caronamide following unsuccessful early treatment with penicillin and streptomycin. Hein and Berg[5] treated two patients with Str. fecalis endocarditis with massive doses of penicillin resulting in recovery. One of their patients received 12,000,000 units daily for 60 days, or 720,000,000 units. The second patient was given 20,000,000 units daily for the same period, or a total of 1,200,000,000 units. Clark, Bryner, and Rantz,[6] in a report of nine cases of penicillin-resistant subacute bacterial endocarditis, record one case of the disease caused by Str. fecalis treated with eight to 12,000,000 units daily for 60 days with apparent recovery from the infection after a total of approximately 900,000,000 units of penicillin. In another series of 19 cases,[7] there were three instances of infection reported as due to Str. viridans, type fecalis, and all three patients recovered after relatively small amounts of penicillin were given. Recovery in one of these patients was attributed to streptomycin. Guss[8] has also reported a case with recovery from Str. fecalis endocarditis treated with penicillin and streptomycin.

Because of the importance of using adequate amounts of penicillin early in the course of the disease, all writers stress the necessity for careful bacteriologic control in adjusting dosage to the sensitivity of the organism. In general it is agreed that penicillin should be given in sufficient amount to produce prolonged blood concentration five to 10 times that which inhibits growth of the organism in vitro. In penicillin-resistant cases, blood concentrations many times higher have too often been ineffective.

The purpose of this report is to record a treatment failure in a case of subacute bacterial endocarditis caused by Str. fecalis. Unusual features include the use of more than 3,000,000,000 units of penicillin over a period of 16 months of almost continuous treatment; the use of various adjuvant measures including streptomycin, caronamide, fever and bacteriophage therapy; and isolation of the infecting organism from the blood, teeth, tonsils and stool, and from various tissues at necropsy including the heart's valves.

Case Report

First Admission

Mrs. R. Mc., a 30-year-old negro housewife, was admitted to the University of Kansas Medical Center on September 19, 1947. Her chief complaints were fatigue and enlargement of the finger tips of three months duration; and, chills, fever, and leg pain for two months.

History of Present Illness: The patient became ill three months prior to admission with gradual onset of fatigue, failing appetite, and slow weight loss. She soon noticed painless enlargement of the tips of all fingers. Two months prior to admission, she began having aching pain in the calf muscles and knees, aching and stiffness of the fingers, and daily chills with fever to 104° F. The onset of chills and fever followed a few days after a brief episode of pain in the right lower quadrant of the abdomen accompanied by nausea and vomiting for one day. All symptoms persisted from their onset, and the patient remained in bed part of the time at home.

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One month prior to admission she had a sudden attack of retrosternal pain with exertional dyspnea and radiation of pain into the neck and left arm. A physician who saw her made the diagnosis of "heart attack" and recommended hospitalization. No treatment was given. The chest pain did not recur, and the patient continued at home on partial bed rest until admission. In the month prior to admission she noticed occasional painful red nodules in the finger tips which persisted for a few days and then disappeared.

Additional symptoms from the review of systems were: frontal headache of three months duration; palpitation of the heart of three months duration; constipation, bloating and belching, especially after eating cabbage and beans, of five years duration; scanty menses, of three months duration; and nocturia twice nightly for two months.

Family History: Not contributory.

Past History: The patient had had normal pregnancies in 1936, 1940 and 1946. There was no history of rheumatic fever or chorea. The patient had no cardiac symptoms prior to the present illness. In 1939 she was ill at home for three months with a "nervous breakdown."

Five months prior to the onset of the present illness, the patient was examined in the Outpatient Clinic with complaints of belching, abdominal pain and dizziness after meals. Physical examination showed evidence of chronic malnutrition. The heart was negative except for reduplication of the mitral second sound. Complete blood count, urinalysis and sedimentation rate were within normal limits. At a single subsequent visit four months before the present illness, the patient reported marked improvement after symptomatic medication and cessation of smoking. She was not seen again until three days prior to hospital admission, and the above history was then obtained.

Physical Examination: The patient was an intelligent, thin, poorly nourished, colored female who appeared chronically ill. Temperature was 98° F. Pulse rate was 96, regular sinus rhythm. Blood pressure was 80/50. The conjunctivae and optic fundi were pale. The heart was not enlarged; there was a marked apical systolic thrill; a harsh grade four systolic murmur was heard at the mitral area and was transmitted over the entire precordium, into the left axilla and to the back. The spleen was tender and barely palpable. There was marked clubbing of the fingers and mild clubbing of the toes. Two small, red, tender macular areas were present in the right palm, and a similar spot was present on the plantar surface of the right foot. Neurologic examination was negative.

Laboratory Examination: R.B.C. 3,900,000 per cu. mm. Hemoglobin nine grams per hundred cubic centimeters or 58 per cent. W.B.C. 11,200 with normal differential count. Urinalysis showed a faint trace of albumin, and microscopically there were numerous pus cells per high power field. Urine culture was negative. The erythrocyte sedimentation rate was 30 mm. in one hour (Cutler). Blood Wassermann was negative. Blood N.P.N. was 27.2 mg. per hundred cubic centimeters, creatinine 1.5 mg., and sugar 78 mg. An electrocardiogram showed only sinus tachycardia. X-ray and fluoroscopy of the heart and chest were negative.

The initial blood culture, of September 16, 1947, was rapidly positive for a Gram-positive coccus in pairs and short chains, identified as Streptococcus fecalis, or enterococcus.[9, 10] There were more than 200 colonies per cc. of blood by plate count. The colonies on blood agar showed alpha or green type hemolysis. Growth in broth culture was turbid and smooth. The organism showed a tendency to liquefy gelatin and Loeffler's medium. Growth was uninhibited at pH 9.6 and in 6.5 per cent sodium chloride solution. Heat resistance tests showed survival of the organism for 30 minutes at 60 C. In glucose broth the organism grew at a final pH of 4.5. The organism was differentiated from Streptococcus SBE by the absence of mucoid production in five per cent sucrose broth and five per cent sucrose agar. Repeated attempts to type the organism serologically by the Lancefield method were unsuccesful. (The same cultural characteristics of the organism were consistently demonstrated 12 times, from the first culture to that of January 28, 1949). Initial sensitivity tests of the organism showed that growth was not inhibited by 25 units of penicillin per cc. of medium. (The extremely high resistance to penicillin, in view of later findings, is unexplained). Growth was inhibited by 3.12 micrograms of streptomycin per cc. of medium. Growth was not inhibited by 25 mg. of sulfadiazine per cc. of medium.

Clinical Course and Treatment: With the diagnosis established as subacute bacterial endocarditis due to Str. fecalis, treatment with penicillin was started September 21, 1947. Doses of 50,000 units of crystalline penicillin G were given intramuscularly every two hours for one day, then 100,000 units every two hours for two days, then 500,000 units every two hours for two days (Figure 1). Because of the reported high in vitro penicillin resistance of the organism, treatment was then continued with streptomycin alone from September 26 to October 20. A total of 50 Gms. of streptomycin was given, in doses of 0.16 to 0.5 Gm. intramuscularly every four hours. Streptomycin blood levels ranged from 4.8 to 9.6 micrograms per cc. The first negative blood cultures, October 6 and 11,

FIGURE 1

Summary of Penicillin and Caronamide Therapy, Penicillin Blood Levels, and Blood Cultures

First Admission

Penicillin						Penicillin Blood level		Caronamide			Blood Culture colonies	
		Date				Date		Date			Date	per
Type	Route	From	To	Unit Dosage	Subtotal, million units		Units/cc. of serum	From	To	Dosage		cc.
Aqueous	I.M.	9-21-47	9-26	50,000 to 500,000 q.2 hr.	15.0						9-16-47	200
Crystalline											9-21	150
		9-26	10-20	(Strepto-mycin)							10-1	9
G											10-6	0
											10-11	0
											10-16	150
		10-24	11-7	100,000 to 150,000 q.3 hr.	13.6	10-27	1.09				10-21	150
"	I.M.										11-3	14
											11-5	16
		11-7	11-13	(Strepto-mycin)							11-13	150
		11-13	12-22	150,000 to 300,000 q.3 hr.		11-17	2.18	11-17	11-21	1 to 1.5 gm. q. 3 hr.	11-20	6
"	I.M.					11-18	17.50				11-26	0
						11-22	2.18				12-1	3
						11-27	2.18	11-21	12-6	2 gm. q. 3 hr.	12-8	8
		12-22	12-24	625,000 q.3 hr.	76.0	12-9	8.70				12-15	4
						12-23	4.35				12-23	4
		12-24	1-20-48	1,250,000 q.3 hr.		12-26	17.50	12-24	1-1	2.5 gm. q. 3 hr.	12-30	0
						12-30	34.50				1-9-48	0
						1-3-48	34.50	1-4	1-12	2.5 gm. q. 3 hr.	1-13	0
"	"					1-4	34.50				1-16	0
						1-7	34.50			(Skin rash)	1-20	0
						1-11	8.70				1-27	0
						1-13	34.50				1-30	0
						1-16	8.70					
					270.0	1-20	17.50					
				Outpatient Clinic							2-12	70

Second Admission

		2-17	2-29	2,000.000 q.3 hr.		2-18	34.50	2-17	2-20	2.5 gm. q. 3 hr.	2-18	0
"	"					2-23	34.50				2-23	0
						2-28	17.50	2-21	3-1	2.5 gm. q. 3 hr.	2-28	0
	I.V.	2-29	3-10	16,000,000 per 24 hr.		3-1	17.50				3-1	0
						3-3	139.0				3-6	4
					336.0	3-10	557.0				3-10	4
											3-17	25
"	I.M.	3-23	3-28	625,000 q.3 hr.		3-23	17.50	3-23	3-28	2.5 gm. q. 3 hr.	3-24	45
"	I.V.	3-29	4-11	5,000,000 per 24 hr.		3-29	9.0	3-29	5-4	3 gm. q. 3 hr.	3-29	8
						4-8	17.50				4-6	15
"	I.M.	4-11	5-3	625,000 q.3 hr.		4-13	17.50				4-13	7
						4-21	17.50				4-20	10
						4-24	34.50				4-27	8
"	I.V.	5-4	5-9	5,000,000 per 24 hr.	230.0	5-5	4.50				5-4	6
"	I.V.	5-10	5-31	10,000,000 per 24 hr.		5-19	34.50				5-14	7
						5-21	69.50				5-21	30
					210.0						5-28	6
Duracillin	I.M.		Total,	Crystalline	1,150.6							
		6-8	6-15	600,000 q.6 hr.	151.2	6-9	17.0	6-8	7-14	4 gm. q. 3 hr.	6-11	55
"	"					6-14	8.50				6-18	4
		6-16	6-30	2,400,000 q.6 hr.		6-25	69.50				6-25	2
						6-29	69.50				6-29	2
"	"	7-1	7-18	2,400,000 q. 3 hr.	326.4	7-2	140.0			4 gm.	7-2	2
						7-9	4450.0	7-17	8-21	q. 3 hr.	7-6	0
						7-13	1113.0			6 x daily	7-16	0
"	"	7-19	8-21	3,000,000 q.3 hr. 6 x daily		7-20	140.0				7-20	0
						7-31	69.50				7-31	0
						8-10	69.50				8-10	0
						8-17	557.0				8-17	0
					594.0	8-20	69.50				8-20	0
											8-28	0
				Outpatient Clinic							9-2	0
											9-7	8
		9-10	10-11	(Mapharsen and Bismuth)							9-13	82
											10-1	163
At Home Duracillin	"	10-11	10-15	1,500,000 q.3 hr. 5 x daily	25.5	10-15	8.70				10-11	190
											10-15	27
"	"	10-15	11-21	2,100,000 q.3 hr. 5 x daily		10-22	69.50	10-22	11-1	4 gm. q. 3 hr. 6 x daily	10-22	1
						11-5	34.50				11-5	5
						11-15	8.70				11-15	0
					375.9			11-1	11-6	Same	11-19	0
"	"	11-22	11-25	4,200,000 q.3 hr. 5 x daily	84.0	11-22	34.50				11-22	28
"	"	11-26	12-12	2,100,000 q.3 hr. 5 x daily		11-26	17.50				11-26	30
						12-3	4.35	12-3	12-8	4 gm. q. 3 hr. 6 x daily	12-3	30
						12-6	34.50				12-10	70
					163.8	12-10	34.50					
"	"	12-13	12-16	1,050.000 q. 3hr. 5 x daily	15.0	12-13	34.50	12-10	1-10-49	2 gm. q. 3 hr. 6 x daily	12-13	45
											12-17	95
											12-20	90
"	"	12-22	1-24-49	1,200,000 q.3 hr. 5 x daily		12-27	2.17				12-27	180
						12-31	4.35	1-21	1-28	2 gm. q. 3 hr.	12-31	61
						1-10-49	2.17				1-7-49	200
					190.8	1-21	16.0			4 x daily	1-21	130
				Third Admission								
Duracillin		1-31	2-2	1,200,000 q.3 hr. 5 x daily	12.0	1-31	16.0				1-31	50

Total, Duracillin 1,938.6
Total, Penicillin 3,089,200,000 units

were obtained in this period of streptomycin treatment (Figure 1). Another determination of streptomycin sensitivity from the positive culture of October 16 showed marked increase in resistance with growth not inhibited by 25 micrograms per cc. Later determinations of streptomycin sensitivity showed growth not inhibited by 250 micrograms per cc. Also from the culture of October 16, a retest of penicillin sensitivity showed inhibition of growth by 1.25 units per cc. of culture medium.

Clinically there was little improvement in this initial treatment period. For nine days after admission, the patient had fever up to 100.8° F. daily accompanied by chilly sensations and intermittent headache. The temperature then became normal. On the third hospital day a typical splinter hemorrhage appeared in the right index nail bed. On October 5 there was an episode of severe upper left quadrant abdominal pain with transient low fever attributed to splenic infarction.

Treatment with penicillin was resumed on October 24 and was continued to November 7. The blood culture remained positive. The first penicillin blood level, done in this period, was obviously therapeutically inadequate (Figure 1). From November 7 to 13 streptomycin alone was again given and the blood culture remained positive (Figure 1). An additional 12 Gms. of streptomycin was given in doses of 0.33 Gm. every four hours, with blood levels of 38.4 micrograms per cc. on two occasions.

At this time the patient was anemic in spite of repeated small blood transfusions. A single petechia in the conjunctiva was the only further embolic phenomenon. Though she showed definite clinical improvement in appetite and feeling of well being, she complained of abdominal pain, and there was frequent gaseous distention of the abdomen. On November 9, the patient developed sudden nocturnal tachycardia with irregular rhythm. The apical pulse rate was 160 per minute with a pulse deficit. The clinical diagnosis of auricular fibrillation was made, and the patient was digitalized rapidly with purodigin which was then continued in maintenance dosage of 0.2 mg. daily. Sinus rhythm soon returned following digitoxin, and auricular fibrillation did not recur.

On November 13, penicillin was resumed and was continued without interruption until January 20, 1948. In this period, caronamide* was first added to the treatment program (Figure 1). Repeated determinations of penicillin sensitivity of the infecting organism on December 1 and 15 again showed growth inhibited by 1.25 units per cc. The blood culture remained positive with a few organisms per cc. until the penicillin dosage was increased on December 24 to 10,000,000 units daily. Blood samples for penicillin level determinations were taken in the period from 9:00 a.m. to 10:00 a.m. daily in nearly all instances, usually within 30 minutes after the last penicillin injection. Representative blood levels for each period of penicillin treatment are indicated (Figure 1). From December 24 to January 20, very high penicillin blood levels were obtained due to the massive dose of penicillin and to the simultaneous administration of caronamide. The data do not permit exact correlation between penicillin blood levels and caronamide administration; however, it is obvious that the penicillin level became lower after caronamide was discontinued because of nausea and skin rash, on January 12 (Figure 1). The blood culture became negative on December 30 and remained so until January 30, 1948, the last culture prior to dismissal February 4.

Beginning late in December the patient showed steady clinical improvement. She remained afebrile. No further embolic phenomena occurred. Appetite improved steadily. On January 14, two teeth with enamel defects were extracted under local anesthesia. From the roots of the extracted teeth, Str. fecalis was grown in culture. The organism exhibited the same cultural characteristics as that previously isolated from the blood. On January 21 gynecologic examination by Dr. L. A. Calkins was negative for pelvic disease.

On February 4, 1948, the patient was dismissed, primarily for reasons of expediency to combat anxiety and depression. She was to be followed by twice weekly visits to the Outpatient Clinic. At the time of dismissal she was free of symptoms except for residual weakness. The spleen was not palpable. The heart murmur remained unchanged. She had gained nine pounds in weight. Dismissal medication was purodigin 0.2 mg. daily and multi-vitamin capsules.

Interval Note: One week after dismissal the patient developed sudden urinary frequency with urgency and urethral burning. Examination in the Outpatient Clinic was unchanged except for temperature of 99° F. and two small ulcerated areas in the skin of the left arm and thigh at sites of penicillin injections. Swab cultures of these skin areas were negative. Urinalysis showed a trace of albumin. Because of misunderstanding, blood culture was not obtained until February 12, the 23rd day after cessation of treatment, when it was again positive for Str. fecalis (Figure 1). A retest of the sensitivity of the organism from this culture showed growth was inhibited by 12.5 units of penicillin per cc.

Second Admission

Readmission Note:—The patient was admitted to the hospital the second time on February 17, 1948.

*'Staticin' Caronamide (4'-carboxyphenylmethanesulfonanilide) tablets and 'Cremostaticin' suspension were supplied through the courtesy of Sharp and Dohme, Inc., Philadelphia, Pennsylvania.

Temperature was normal. The pulse rate was 100, regular sinus rhythm. Blood pressure was 95/60. The left pupil was slightly larger than the right. Moderate dental caries was noted. The tonsils were embedded and cryptic. The heart was unchanged from previous examination. The lungs were negative. The spleen was slightly enlarged and not tender. No petechiae were found. The fingers were clubbed. Urinalysis again showed a trace of albumin and there were numerous pus cells per high power field. A urine culture was negative. Red blood cell count and hemoglobin were within normal limits. White blood cell count showed slight leukocytosis. Routine blood chemistry was within normal limits.

Clinical Course and Treatment: Treatment with penicillin and caronamide was resumed on admission and was continued without interruption until March 10. The daily dose of penicillin was increased to 16,000,000 units. From February 20 to March 10 penicillin was first given by continuous intravenous drip, 16,000,000 units per 24 hours in 1500 cc. of five per cent glucose in normal saline. There was marked increase in the penicillin blood levels in this period (Figure 1). The blood culture was negative on February 18, and remained negative until March 6 (Figure 1). It is noteworthy that the blood culture then became positive again while the patient was receiving intravenous penicillin. On March 10 treatment was interrupted because of the lack of penicillin. At this time the patient had painful phlebitis in both arms from the intravenous infusions. Her clinical condition had remained otherwise stationary.

Additional surgical procedures were undertaken in this period in an attempt to remove any possible extracardiac focus of blood stream infection. Between February 23 and March 1, complete dental extraction was done in four stages under pentothal sodium anesthesia without untoward reaction. Cultures from the roots of several of the extracted teeth were positive for Str. fecalis, exhibiting the same cultural characteristics as the organism from the blood. Cholecystography in the first hospital admission had shown numerous small gallstones. In an attempt to evaluate the possibility of gallbladder infection, duodenal drainage had been done in January, and clear golden bile was obtained which was negative on culture.

On March 4 cholecystectomy was performed under pentothal sodium and curare anesthesia. Convalescence was uneventful. Intravenous penicillin therapy was discontinued briefly during the time of operation and was then resumed. It has been mentioned that the blood culture of March 6, two days after operation, was again positive. The pathologic diagnosis of the removed gallbladder was "acute and chronic cholecystitis and cholelithiasis." Cultures of the wall and mucosa of the organ were negative. Abdominal exploration at the time of operation showed four to five large scarred areas on the surface of each kidney. The spleen was moderately enlarged, not scarred, with adhesions to the lateral abdominal wall.

Treatment with penicillin and caronamide was once more resumed on March 23. This was continued to May 9 in smaller daily dosage than in the previous period because of uncertainty of supply. Alternating intramuscular and intravenous routes were used (Figure 1). The blood culture remained positive for a few organisms per cc. From May 10 to May 31 the dose of penicillin was again increased, to 10,000,000 units daily intravenously. Despite the high penicillin blood levels in this latter period, without use of caronamide, the blood culture remained positive (Figure 1). By May 31, when treatment was temporarily once more interrupted, the patient had received a total of 1,150,600,000 units of crystalline penicillin G.

Adjunctive therapeutic measures requiring comment were used in the above period of penicillin treatment. Repeated penicillin sensitivity tests in March of the infecting organism had shown inhibition of growth by 3.12 units per cc., an increase in sensitivity from the time of the second admission. On March 24 the sensitivity test was again done with temperature at 40° C instead of the usual 37° C. The test showed no increase in sensitivity of the organism at the higher temperature. Nevertheless, between April 5 and 20, the patient was given six artificial fever treatments by inductothermy in conjunction with penicillin and caronamide. She received a total of 38½ hours of fever 104° F or above, which included 19 hours fever of 105° F. There was no significant improvement from fever therapy, and no untoward reaction except for several hours malaise following each treatment, and the appearance of a typical Osler's node in one thumb after the first treatment.

Also in April the patient was given the first course of specific enterococcus bacteriophage therapy* intravenously according to the methods of MacNeal.[3] In vitro tests in the laboratory of preparation showed the organism "completely sensitive" to the prepared bacteriophage, and growth was inhibited by five units of penicillin per cc. Bacteriophage was given intravenously in three separate courses, from April 27 to August 3, in conjunction with penicillin therapy, and to the point of febrile reactions in the second and third courses without producing any demonstrable benefit.

At this point in the patient's treatment an addi-

*Bacteriophage was supplied by the Department of Bacteriology of the New York Post-Graduate Medical School and Hospital, 303 East 20th St., New York, N. Y., through the courtesy of (Miss) Anne Blevins, Assistant in Bacteriology.

tional supply of penicillin* in the repository form became available, thus making continuation of treatment possible. On June 8 treatment was resumed with duracillin and caronamide (Figure 1). From June 8 to 30 the patient received from 2,400,000 to 9,600,000 units of procaine penicillin daily in divided doses. Caronamide was given in higher dosage than previously. Although the blood culture remained positive, by the end of June there was a significant decrease in the number of infecting organisms. From July 1 to 18 the largest prolonged daily dose of penicillin, 19,200,000 units, was used. The extremely high penicillin blood levels attained during this time are considered due to the massive dose of penicillin and the concomitant administration of caronamide. On July 19 the daily penicillin dose was decreased to 18,000,000 units which was continued until August 21 (Figure 1).

As a reflection of the intensification of treatment, the blood culture on July 6 was negative and cultures remained negative until dismissal on August 22 (Figure 1). Though the patient was quite small, and the available muscle mass was limited, she tolerated well the injections of eight to 10 cc. of duracillin every three hours. There was little pain at the time of injection and minimal tissue induration afterward. Thus the same sites in the buttocks and thighs were used in rotation repeatedly. In the later weeks of this period of procaine penicillin therapy, the patient developed marked coarse tremor of the head and extremities, aggravated by exertion, and partially controlled by small doses of sodium pentobarbital. The tremor, accompanied by intermittent nausea and persistent sinus tachycardia, was attributed to procaine reaction from the massive doses of duracillin.

On July 14, in a further attempt to remove a possible focus of infection, tonsillectomy was performed under local anesthesia. Str. fecalis had previously been recovered on two attempts from swab culture of the tonsils. The same organism, exhibiting cultural characteristics identical with those of the blood organism, was recovered in culture from the tonsillar tissue. Convalescence from this operation was complicated by severe post-operative bleeding requiring bronchoscopic aspiration. Sutures were placed in the tonsillar fossae a few hours after operation, and the patient rapidly regained her previous status.

In the entire period of hospital stay in the second admission, there were only occasional temperature elevations to 99 or 100° F., associated chiefly with phlebitis from intravenous penicillin therapy. On August 22, 1948, the patient was again dismissed from the hospital, to be followed in the Outpatient Clinic. She was afebrile, ambulatory but very weak, with marked coarse generalized tremor which was exaggerated by muscular effort. The heart examination was unchanged. The spleen was not palpable. Clubbing of the fingers and toes had nearly disappeared. Dismissal prescriptions were a high protein, high caloric diet, purodigin 0.2 mg. daily, and vitamin and iron supplements.

Outpatient Clinical Course and Treatment: The blood culture, negative from July 6 to September 2, was again positive in the specimen taken at the outpatient visit of September 7, 17 days after cessation of penicillin therapy. Growth was inhibited by 3.12 units of penicillin in vitro. At this time additional penicillin was not available. From September 10 to October 11 the patient was treated with twice weekly injections of mapharsen 0.03 Gm. intravenously and thiobismol 0.1 Gm. intramuscularly. Though in vitro tests of sensitivity of the Str. fecalis to these drugs showed inhibition of growth by very small concentrations, there was no clinical improvement. The number of infecting organisms in the blood increased (Figure 1). Muscular weakness and tremor slowly improved. Anxiety and depression also improved with the patient's being at home.

After a session of detailed instruction to the patient's family, treatment with duracillin was resumed at home on October 11. The injections were given by a relative who quickly proved herself a capable assistant. A record of the date, hour and dose of each injection of duracillin was kept and was reviewed by the examiner at the twice-weekly outpatient visits. Though an occasional dose of penicillin was unavoidably omitted, treatment was carried out essentially as directed. From October 11 to 15, 7,500,000 units daily were given in five divided doses. The total duracillin given in this four-day period, and in subsequent periods, was calculated from actual count of the individual injections which the patient received (Figure 1). The dose of duracillin was increased on October 15 to 10,500,000 units daily which was continued until November 21. In this period caronamide was again given intermittently, but was taken approximately one-half as often as prescribed because of nausea (Figure 1). The infection again responded to duracillin with diminution in the plate count of the organisms in the blood cultures, and two negative cultures were obtained in mid-November (Figure 1).

The penicillin blood levels throughout this period of treatment at home were determined on blood samples taken approximately 14 hours after the last dose of duracillin. This interval occurred because the patient took her five daily injections through

*"Duracillin-in-oil" (crystalline procaine penicillin G in oil. Lilly) for the treatment of this patient was generously supplied through the courtesy of the Eli Lilly Co., Indianapolis, Ind.

the day, and on the day of outpatient visits did not receive the first morning injection. On November 22 the dose of duracillin was doubled for a brief interval, the 14 cc. being given in two sites. With 21,000,000 units daily, the patient quickly developed nervousness, tremor, and tachycardia; and, after 84,000,000 units in four days this dosage was abandoned (Figure 1). The blood culture at this time was again positive as were all subsequent cultures. The duracillin dosage was again 10,500,000 units daily from November 26 to December 12. The infecting organism continued to show inhibition of growth in 3.12 units of penicillin per cc. On December 13, penicillin dosage was decreased by necessity of supply to 5,250,000 units daily. On December 22, the dose was slightly increased to 6,000,000 units daily. Following the decrease in penicillin dosage, there was a decrease in the blood levels, and an increase in the number of organisms in the blood (Figure 1).

The patient's clinical condition did not change materially during the period of outpatient care from August, 1948, to January, 1949. In the first month, despite recurrence of bacteremia, she slowly gained in strength and weight, and tremor of the head and extremities gradually improved. There was often fever of 99 to 100 F. Tachycardia persisted with pulse rate varying from 102 to 120 per minute. The loud, harsh, apical systolic murmur remained unchanged. There was no evidence of heart failure. Clubbing of the fingers did not recur until the last few weeks of illness. The spleen remained slightly enlarged and was not tender. Digitalis preparations in maintenance dosage, dietary supplements, and a high protein diet were continued. Routine laboratory examinations in the period of outpatient care showed persistent slight to moderate secondary anemia, slight leukocytosis, a trace of albumin in the urine with microscopic examination showing a few pus cells.

In early September, 1948, an attempt was made to give the patient sulfonamide preparations which she soon refused to take because of nausea. In October complete x-ray examination of the gastrointestinal tract was negative. A short time later cultures of the stool were twice positive for Str. fecalis. The isolated organism showed the same growth and cultural characteristics as the organism previously isolated from the blood, teeth, and tonsils. By early November the patient had gained five pounds over her weight at the time of dismissal from the hospital in August. A further attempt at adjuvant therapy was made with sulfonamides but was abandoned after three days because of recurrent cramping abdominal pain and nausea. The patient continued to take the prescribed caronamide only intermittently because of recurrent nausea.

At the outpatient visit on January 21, 1949, the fingers were again clubbed and there were two Osler's nodes in the fingers of the left hand. On January 24 the patient's supply of duracillin was depleted. She was unable to return to the Outpatient Clinic because of bad weather until January 28. Examination at this time showed no change. Late in January the infecting Str. fecalis was tested for sensitivity to aureomycin and growth was inhibited in vitro by 0.78 micrograms per cc. An attempt was being made to procure aureomycin for the continuation of treatment at the time of the third admission.

Third Admission

Readmission Note: At 11:00 p.m. on January 29, 1949, the day following the last outpatient visit, the patient developed sudden excruciating headache which was not relieved by aspirin. Two hours later the patient's husband was awakened by a thud and found her on the floor where she had fallen from bed. She was unable to talk but remained conscious. A few hours later there was noticeable weakness of the right arm and leg. In the afternoon of January 30 the patient was examined at home by a member of the resident staff and was readmitted to the hospital.

When examined in the hospital, the patient was afebrile, conscious and exhibited complete motor aphasia with comprehension of voice registered by facial expression. Pulse rate was 100 per minute. Blood pressure was 110/70. The pupils were equal and normally reactive to light. There was paralysis of the lower right side facial musculature with drooling of saliva from the right side of the mouth. The optic fundi were negative. The neck was supple. The head was held turned to the left. The lung fields were clear, and the cardiac murmur was unchanged. There was weakness of the right arm and leg. The tendon reflexes were bilaterally equal and no pathologic reflexes were demonstrated.

The laboratory examination showed moderate secondary anemia, moderate leukocytosis with increase in polymorphonuclear leukocytes, a few pus cells in the urine, blood N.P.N. and sugar within normal limits, and elevated red blood cell sedimentation rate. The blood culture remained positive.

Clinical Course and Treatment: The clinical diagnosis of this final episode in the patient's illness was cerebrovascular accident, embolism of the left cerebral hemisphere with involvement of the internal capsule and speech area. On January 31 duracillin in token dosage was resumed (Figure 1). Supportive treatment with oxygen, parenteral fluids, and papaverine was begun on admission. On February 1, the patient showed brief improvement after the third of four stellate ganglion blocks with novocaine was given. She was somewhat more alert and muscle

tone in the right arm improved. Speech did not return. In the evening of February 1, the temperature rose to 101.4 F. In the afternoon of February 2, the patient became stuporous then lapsed into coma. A few hours later there was a brief episode of two separate generalized convulsions following which the patient expired quietly.

Autopsy

Complete autopsy was performed two hours after death by the resident staff of the Department of Pathology. The significant changes were limited to the heart, lungs, spleen, kidneys, and brain.

The heart was not enlarged. In the anterior wall of the left ventricle was a fibrous patch of scar tissue one cm. in diameter. On the endocardium of the auricular side of the mitral valve were numerous soft, stringy vegetations approximately 0.2 cm. in diameter and one cm. in length. The mitral valve leaflets were thickened on the free edges with nodular small vegetations without ulceration. Similar nodular vegetations were present at the base of the valve in the auricular endocardium. In the lung bases were multiple areas of slightly elevated, reddish-brown infiltration a few centimeters in diameter. The spleen was slightly enlarged, and a large contracted scar was present on the superior surface of the organ. There was marked stellate pitted scarring of the surface of both kidneys with adherence of the capsule in the scarred areas. The meninges of the brain were infiltrated with clotted blood in the region of the left frontal and temporal lobes, cerebellum and pons. An area of encephalomalacia four cm. in diameter was found in the anterior left cerebrum involving the anterior portion of the left basal nuclei. The area was infiltrated with edema fluid and clotted blood with a firm nodular central portion approximately two cm. in diameter. From this central area blood was traced into the left lateral ventricle and along the sylvian fissure to the base of the brain. The choroid plexus was covered with clotted blood. The lateral ventricles were not dilated. The cerebellum and pons, medulla and cranial nerves presented no gross intrinsic changes.

The histologic changes in the heart were limited to the myocardium, endocardium, and mitral valve. Sections of the myocardium showed areas of fatty change, granular degeneration, and segmentation and fragmentation of the muscle cells. A section through the area of myocardial fibrosis showed fibrous scar tissue and moderate inflammatory reaction. In sections of the mitral valve there was dense fibrosis and superimposed recently-formed fibrous tissue with numerous small blood vessels; the valve tissue was infiltrated with leukocytes, predominantly polymorphonuclear. On the surface of the valve were fibrinous masses containing bacteria of the coccus group. In sections of the lungs some of the alveoli and especially those near the bronchi contained masses of polymorphonuclear leukocytes. In areas where the leukocytes were numerous, the lung framework was indistinct. Sections of the spleen showed irregular thickening of the capsule and a dense fibrous scar extending from the surface into the substance of the organ with collections of lipoid cells in the fibrous area. The Malpighian bodies showed hyperplasia of the reticulo-endothelial elements. In sections of the kidneys there were areas of coagulation necrosis extending from the surface into the renal tissue with surrounding polymorphonuclear leukocytic infiltration. Some kidney tubules contained hyaline casts, especially prominent in the areas of necrosis. Sections of the brain showed masses of red blood cells in the meninges; also, small refractile brown pigment granules and scattered polymorphonuclear leukocytes. In sections of the area of gross hemorrhage there was destruction of the normal brain architecture, infiltration with polymorphonuclear leukocytes, destruction of blood vessel walls, and wide areas of hemorrhage into the surrounding brain substance.

The pathologic diagnosis was acute and chronic mitral valvulitis and mural endocarditis; focal acute and chronic myocarditis; healed infarct of the spleen; acute splenitis; recent infarct of the kidney; embolic nephritis; pulmonary congestion and bronchopneumonia; and, cerebral hemorrhage involving the left fronto-temporal lobes, left internal capsule, and lateral ventricle.

Bacteriologic cultures taken at necropsy of the spleen, brain, mitral valve, and vegetations on the valve were all positive for Str. fecalis with the same cultural characteristics as the previously-isolated organism. Culture of the heart's blood was negative.

Discussion

Cumulative experience in the treatment of subacute bacterial endocarditis with penicillin has shown that the determining factors in the success or failure of treatment are: the early administration of adequate amounts of penicillin, the resistance of the infecting organism to the antibiotic, the critical nature of embolic phenomena, and the degree of cardiac damage, both valvular and myocardial, which precedes, accompanies and follows treatment.[1, 11] All investigators agree that the Str. fecalis is inherently resistant to penicillin.[3, 6] It is also emphasized[6, 12] that in vitro resistance of the infecting organism does not always indicate the clinical response to penicillin; therefore, intensive treatment despite high in vitro resistance is mandatory.

While in retrospect we regret not having given our patient more penicillin initially, the literature records many instances of later successful treatment

following inadequate initial dosage.[6] It is clear that resistance of the organism to penicillin may increase in some patients during course of therapy.[11] Although the organism in our patient showed rather marked fluctuations in sensitivity the overall resistance was not markedly changed, discounting the initial resistance to 25 units of penicillin per cc. which was not confirmed by later tests.

At no time in the course of therapy did the patient present signs of cardiac failure. This factor has been responsible for failures of treatment in every sizeable series of cases reported. In some instances intractable heart failure, due to valvular deformity and myocardial damage, has resulted in death when the infectious process was apparently arrested. Usually, however, death from cardiac failure is accompanied by clinical or autopsy evidence of the persistence of infection.[11] Death in the case reported must be attributed to the terminal cerebral embolic episode due to persistent bacteremia, due in final analysis to inadequate treatment.

In view of the repeated rapid return of bacteremia following cessation of therapy, and recovery of the infecting Str. fecalis from the teeth, tonsils, and stool during the course of treatment, it is doubtful whether any amount of penicillin would have produced arrest of the infection in this patient.

Other than the occurrence of thrombophlebitis when crystalline penicillin was used intravenously and the nervousness, tachycardia and tremor attributed to procaine reaction in the period of treatment with duracillin, no untoward effects of penicillin were observed. Roston and Stollerman[13] have recently reported the exclusive use of procaine penicillin in a small series of cases successfully treated. These authors found no local or systemic reactions to procaine penicillin given in doses of 450,000 to 600,000 units once or twice daily for as long as eight weeks. It is of interest that two of their six patients had been treated initially with short, massive courses of crystalline penicillin G with prompt relapse on cessation of treatment. Both of these patients were re-treated successfully with the lower, rather moderate doses of procaine penicillin mentioned.

Caronamide[14] was given to the patient in an attempt to secure higher, more effective penicillin blood levels. The prolonged use of this agent, to block the renal tubular excretion of penicillin, has been reported by others[4, 15] in the management of subacute bacterial endocarditis due to Str. fecalis. Nausea and vomiting, as in the case here reported, have occurred frequently, and at times have been of such severity as to preclude further use of the drug. Eisman et al[15] observed one instance of acute glomerulonephritis at autopsy, in addition to the usual findings in subacute bacterial endocarditis. They considered this reaction as probably not caused by caronamide. The drug was administered to our patient for 158 days during hospitalization, in numerous courses varying from a few to 36 days. In addition, the patient took the drug approximately one-half as often as prescribed during the period of home and outpatient treatment. Except for the initial brief course (Figure 1), caronamide was given in therapeutic doses. The drug was repeatedly discontinued because of nausea and vomiting, but was also taken for long periods without distress. In January, 1948, a papular skin rash of brief duration was attributed to caronamide. No other toxic effects were recognized. The data presented allow the conclusion that caronamide did at least enhance the penicillin blood levels during treatment with crystalline penicillin G (Figure 1).

Certain additional laboratory findings are of interest and may be mentioned. Blood platelet counts on two occasions, and determinations of bleeding time and clotting time (tube method) were within normal limits. Urea clearance determinations done on five occasions from September, 1947, to August, 1948, gave results ranging from 66 and 75 per cent of average normal function in the first two tests to 56 per cent in the last. A single phenolsulfonphthalein test in July, 1948, showed 25 per cent excretion of the dye in two hours. Renal damage has been shown to be a factor in depressing the tubular excretion of penicillin, with elevation of the blood concentration of penicillin, in some patients with subacute bacterial endocarditis.[16]

Summary

An unusual case of subacute bacterial endocarditis is presented. Therapeutic failure resulted despite the use of massive amounts of penicillin and caronamide for prolonged periods. The infecting organism was a resistant Str. fecalis. The organism produced persistent bacteremia, and was recovered in culture from various tissues during the course of therapy and from the affected mitral valve at autopsy. Significant factors in the management of the disease are discussed.

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Primary Neurofibroma of the Vagina: A Case Report

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Solid benign tumors of the vagina are relatively rare. Wharton[12] reported 260 vaginal tumors, of which 38 were solid and benign, to be represented in 47,500 specimens studied. Stander[9] tabulated a consecutive series of 9,226 tumors found in women, of which 2,648 were of uterine origin and only 54 arose from the vagina.

The American literature has been reviewed for the past 12 years and no records or case reports on primary neurofibroma of the vagina were found. The extreme rareness of this tumor, the diagnostic problems encountered, and the association of the tumor with pregnancy encourages the following report.

Tumors may occur anywhere in the vaginal wall. Neurofibromas in this location may grossly appear to be well encapsulated and benign. However, their cellular structure may question benignity without definitely supporting a diagnosis of malignancy. This should place the clinician on guard.

Symptoms produced by vaginal tumors are influenced by size, position, degenerative changes and mucosal ulceration. They may consist of dyspareunia, interference with normal coitus, bloody or purulent discharge, difficulty in taking a douche, or difficulty and/ or frequency and urgency of urination. Encroachment of the tumor upon the urethra with partial or complete urinary obstruction and occasional urinary retention has been reported.[8] Examination then will reveal a mass protruding from one of the vaginal walls. Ulceration and infection of the vaginal mucosa can be responsible for vaginal bleeding or purulent discharge.[11]

According to Te Linde,[11] the important things to bear in mind in a differential diagnosis are the possibilities. Mistaken diagnoses of cystocele, urethrocele, prolapsus uteri and vaginal cyst have been made. A careful pelvic examination is usually sufficient to make a reasonably certain diagnosis, but if the mass is in the anterior vaginal wall, a urological examination may be a deciding factor.

The treatment of vaginal tumors is complete surgical excision.[11] If the tumor is in the anterior or anterolateral vaginal wall, a retention catheter should be inserted as a guide to safeguard the urethra and bladder neck during the dissection. If it is in the lateral vaginal wall the vesicovaginal plexus of veins may be encountered and give rise to considerable hemorrhage. Great care should be taken to maintain a dry operative field and carefully obliterate all dead space. In the presence of ulceration, the incision should be made through normal mucosa to avoid placing approximating sutures through infected tissue. The pre- and postoperative use of astringent douches, such as potassium permanganate (1:4000)or compound zinc sulfate, supplemented with chemotherapy or antibiotics, will discourage infection in both phases. During the surgical phase, the use of fine chromic catgut will encourage first intention healing.

Case No. 481037

A 33-year-old Negro female, para ii, gravida iii, abortus 0, presented herself during the sixth month of pregnancy for prenatal care. Her pregnancy was normal, but since the birth of her second child 16 months earlier, the following symptoms had persisted: occasional urgency and frequency of urination, mild dyspareunia, vaginal discharge and some intermenstrual bleeding.

Physical Examination: The findings were consistent with a pregnancy of six and one-half months. A 10 x 12 cm semisolid mass, resembling a Gartner's duct cyst, protruded from the right anterolateral vaginal wall about four to five cms below the right fornix. The tumor increased moderately in size and almost filled the midvagina at term.

Delivery: A difficult midforceps, axis-traction delivery, from an LOA position was performed.

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Through displacement of the tumor to the right by the aid of an assistant's hand, the delivery was carried out on the left side of the vagina. On completion of the third stage of labor, the tumor was repeatedly aspirated without success.

Biopsy: Initially deferred by fear of infection, a biopsy was taken during the second postpartum week, and the diagnosis of malignant fibrosarcoma returned. The case was then submitted to Tumor Conference, where immediate surgical extirpation was recommended. A dirty, gray, slough with capillary bleeding was already apparent over the surface of the tumor, and preoperative preparation with astringent douches was begun.

The patient was readmitted to the hospital five weeks following parturition, at which time the following findings prevailed:

Physical Examination: The tumor now measured about 5 x 8 cms. It was attached to the right anterolateral vaginal wall on a sessile base, and seemed to extend deep into the perivaginal tissues. There was no infiltration or induration of the adnexa. The uterus was anterior, subinvoluted, and freely movable.

Laboratory Examination: Urinanalysis normal; red cell count 5.22 million; white cell count 5,650, with a normal differential; sedimentation rate (Cutler) 10 mms in 60 minutes; x-ray and fluoroscopy of the chest and barium studies of the gastrointestinal tract revealed no evidence of pathology.

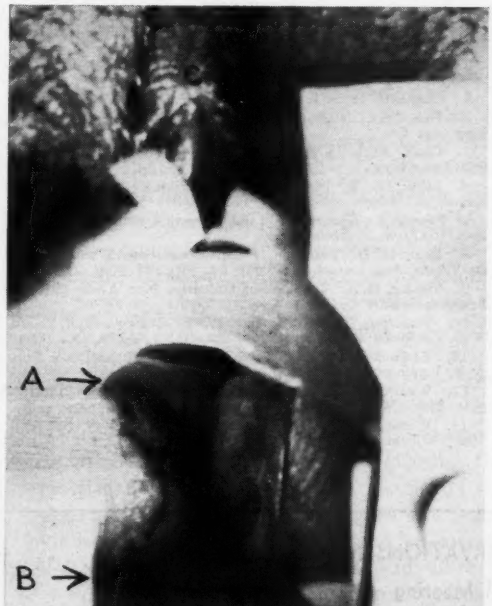

Figure 1. Neurofibroma in situ projecting from right lateral wall of vagina, attachment being represented by arrows at A. and B. C. represents clitoris.

Operation: With a Foley catheter in place, an incision over the antero-superior pole of the tumor, parallel to the long axis of the vagina, and through normal mucus membrane was made. A cleavage plane was established, the tumor mobilized, separated from the pubo-vesico-cervical fascia and

Figure 2. Neurofibroma after removal. External surface represented on left and cut section on right.

enucleated. The fascia was reapproximated and all dead space obliterated. Redundant and secondarily infected mucosa was excised, a drain inserted, and the wound closed with interrupted sutures of fine chromic catgut. A tight, iodoform vaginal pack was inserted for 48 hours and the catheter left in place until the fourth postoperative day.

Pathology: Examination of the tumor created some controversy until multiple and specially stained sections could be studied and the case submitted to Pathology Conference. Grossly it consisted of a firm, grayish-white, homogenous mass, measuring 5 by 8 cms. The microscopic pattern was not consistent with a malignancy, but the sections appeared more cellular than the usual benign lesion of this type. The qualified diagnosis, "neurofibroma of the vagina of increased cellularity," therefore seemed more appropriate.

Postoperative Course: There were no complications and the wound healed per primum. The case was referred again to Tumor Conference, where appropriate internal and external irradiation therapy was recommended, and then initiated until the pathology report had returned. With malignant potentialities in mind, the patient was re-examined at three month intervals, and was last seen 14 months postoperatively. No evidence of local recurrence or late metastasis could be found.

Neurosurgical consultation was obtained during the postpartum period for other evidence of neurofibromatosis. None was found, but attention was called to the presence of pigmented, "cafe-au-lait"

marks[3] distributed over the abdomen, thighs and back, which are believed to be a polytropic expression of the gene for this disease. Likewise, no hereditary background could be elicited.

Figure 3. Photomicrograph of H. & E. section, x100, showing characteristic palisading of nuclei.

Discussion

Novak[7] lists several types of solid benign tumors of the vagina, viz: leiomyoma, fibromyoma, fibroma, papilloma and myxoma. To this, neurofibroma may be added. These arise from the Schwann cells of nerve sheaths, with which the pelvis is abundantly supplied. Mintz[6] and others have reported the occurrence of neurofibromas within the urinary bladder, lending support to this possibility in the vagina.

Sarcomatous changes in neurofibromas are not uncommon and have been estimated to be around 12 per cent. Neurosarcomas, when they occur, may initially appear to be benign, only to become more malignant with succeeding recurrences. They frequently metastasize widely before this potentiality is recognized.[1, 4] The responsibility for the decision of malignancy is a serious one. It is complicated by an expanding interest in neoplastic disease and by further evolution of the criteria for this decision.

According to Gates,[5] neurofibromatosis is predominantly inherited as a Mendelian, non-sex-linked, dominant, occasionally skipping a generation, varying in expressivity and displaying a predilection for certain sites, viz: the auditory nerve. Attention has already been directed to the cutaneous pigmentation, which may find expression in generations skipped by the disease. "Cafe-au-lait" marks, literally coffee-with-milk, are yellowish-brown areas of discoloration, varying in size, shape, shade, and number, distributed over the cutaneous surface of the body.[5,13]

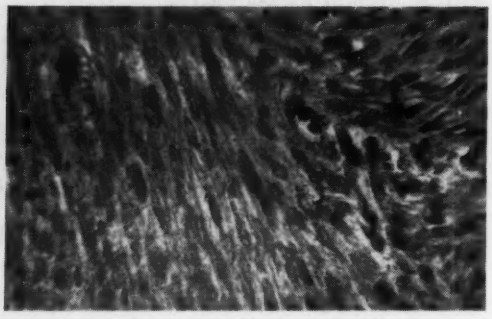

Figure 4. Photomicrograph of H. & E. section, x430.

Summary

A case of primary neurofibroma of the vagina is presented for addition to the literature on this subject. The case is discussed from the clinical, surgical, pathological, and hereditary points of view. Some surgical principles, the responsibility of the decision of malignancy, and the association of "cafe-au-lait" marks with neurofibromatosis as a diagnostic aid are stressed.

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KANSAS MEDICAL SOCIETY
May 15-18, 1950 Wichita, Kansas

Laboratory Methods of Interest to the General Practitioner*

Lee H. Leger, M.D.**
Kansas City, Kansas

It is becoming more and more evident that the family doctor must have an interest and a certain familiarity with a large number of laboratory tests and procedures. He must be able to interpret these tests in connection with the clinical findings in his patient. He must be also aware of the shortcomings of these laboratory aids as well as their advantages.

The doctor's use of these aids to diagnosis and therapy probably will not depend upon his training, alertness and experience, but upon the availability and reliability of the tests. The physician may develop certain laboratory facilities of his own or depend upon private, commercial, hospital or governmental laboratories. The discriminate use of these facilities is necessary, if the doctor is to avoid unnecessary waste of his patients' time and money.

Laboratory methods in general are not diagnostic. They should be employed to confirm or develop well-considered clinical impressions, or as a guide to the progress of treatment. The limitations of laboratory aids are many, and blind dependence upon laboratory results, unsupported by sound clinical judgment, will often result in errors of diagnosis.

The doctor must remember that there are inherent errors in most clinical laboratory tests, even when performed with the greatest care. The detailed technique that must be exercised in performing and evaluating such a simple procedure as a red cell count will illustrate the point. The pipette must be properly calibrated. A free flowing drop of blood must be obtained. Exactness in drawing blood to the desired mark and in drawing up the diluting fluid must be observed. The suspension must be agitated until it is uniform. The fluid in the stem of the pipette must be expelled, and material for the count obtained from the contents of the bowl. The counting chamber must be scrupulously clean. Great care must be exercised in filling the chamber, so as to obtain a uniform distribution of cells. The technician must observe a definite method of accepting or rejecting cells on marginal lines, and must count the cells in enough squares to assure a fair average for the entire chamber. With all these precautions, with counts under uniform conditions there will be a variation of 200,000 to 300,000 cells per cubic millimeter.

It is further known that hydration, relation to meals, chilling, local congestion, excitement, nervousness and other factors will further affect the results.

The human element is a further limitation. Error here may be due to normal differences in judgment or opinion, to fatigue, to carelessness, to indifference or to lack of training. Many errors are often due to overload and fatigue.

Another limitation is in interpretation by the clinician. The clinician must know not only the variations of normal values, but also the probable and possible range of abnormal values. Values beyond the range of probability should be accepted with skepticism as to their accuracy. A blood count that varies widely from day to day "just doesn't make sense."

The use of laboratory tests by the family doctor has other limitations. Availability of the facilities is imperative. However, this limitation should not be in quality, but in the variety, complexity, and number of procedures. A few procedures accurately performed are of far greater value than a long list of mistakes. The isolated physician, working with simple equipment, but able to correlate his clinical and laboratory findings, may develop even greater accuracy than the large well equipped laboratories.

The doctor must be aware of all of these limitations. He must also be aware of the changes that are taking place in medicine. A certain amount of laboratory facilities is essential to the practice of medicine. However, on the basis of accuracy, simplicity and availability, the doctor can select those procedures that he can best use to supplement his clinical skill and judgment. It is not possible for me to present an exhaustive list of such laboratory aids. I can only point the way to a few examples and illustrate how they can serve you.

Blood Examination

I feel that every physician, in this day of modern medicine, should have available the materials and ability to accurately examine the formed elements of the blood. This examination should include routinely a red cell count, white cell count, hemoglobin determination, differential white count and sedimentation rate, and when indicated, facilities should be available to perform a bleeding time, coagulation time, clot retraction, platelet count, reticulocyte count and icterus index.

*Presented for the Postgraduate Circuit Course, University of Kansas School of Medicine, December 1949 and January 1950.

**Assistant Professor of Medicine, University of Kansas School of Medicine.

These tests alone are informative and they will suffice in most instances to indicate whether a detailed blood study and bone marrow examination are necessary.

In the presence of an anemia, comparison of the hemoglobin and red cell count will suggest whether the anemia is hyperchromic or hypochromic. Abnormal shape of the red cells and jaundice may point to a hemolytic anemia. A low white count, platelet and reticulocyte count may point to a depression of bone marrow activity. The presence of a low white count may indicate a virus pneumonia, undulant fever, influenza, a virus disease, malaria, etc. A differential white cell count will rule out a leukemia; a bleeding time, coagulation time and platelet count may point out the cause of the purpura.

Sedimentation Rate

This is one test that no physician can make an excuse for not performing. It costs practically nothing, is simple to run, and tells much. It is not a diagnostic test, except that there are two types of diseases, other than pregnancy, in which the sedimentation of erythrocytes is increased. These are inflammation and malignant growths.

The test has considerable value in the differential diagnosis of many inflammatory lesions. It also is of tremendous value in determining the progress of certain diseases, such as rheumatic fever, arthritis, virus pneumonia, tuberculosis, etc. It has some value in the prognosis in malignancy. In general, if a malignant tumor is removed surgically, the sedimentation rate should return to normal within six weeks if complete removal has been accomplished.

I. *Principle.* Certain diseases change the surface charges of the erythrocytes, which cause them to aggregate. The same principle is responsible for sludged blood.

II. *General Consideration of the Test*

1. The anticoagulant must not shrink the red cells.
2. Blood should stand not more than one hour.
3. There should be no bubbles in the column of blood.
4. The tube must be absolutely perpendicular.

III. *Methods.* Westergren, Wintrobe, and Cutler are all satisfactory.

IV. *Interpretation*

1. Increased rate in tissue breakdown, acute infectious diseases, carcinoma, nephritis, nephrosis, gout, rheumatic fever, rheumatoid arthritis, coronary thrombosis, virus pneumonia and pregnancy.
2. Decreased or normal in hemolytic jaundice, sickle cell anemia and polycythemia.

Agglutination Tests

All doctors in this state have available the facilities of the State Public Health Laboratories for agglutination tests. Both positive and negative tests must be received with due regard for the fact that agglutinins or antibodies may be slow in developing or may be non-specific for the disease being studied. Cross agglutination and vaccinations or injected antigens may make these tests difficult to interpret.

The diagnosis of undulant fever from a low positive titre, without a history of an acute febrile episode in the course of the disease, is open to question in my opinion.

Interpretation of Results of Agglutination Tests

A. *Negative Results* may indicate that:

1. Patient does not have the infection for which the test was made.
2. The sample of blood was taken before the appearance of agglutinins.
3. A negative test followed within a week or 10 days by a positive test and increasing agglutination titre is definite evidence of an acute infection.

B. *Positive Results*

I. Typhoid Fever

(a) Indication of a definite acute infection

1. 3 or 4 plus in 1-80 or higher dilution with 0 antigen.

(b) Indication of past infection, recent vaccination or carrier

1. 3 or 4 plus in 1-80 or higher dilution with H antigen.
2. Little or no agglutination with 0 antigen.

II. Dysentery. A positive reaction in 1-80 or higher dilution is diagnostic.

III. Brucellosis. Positive reaction in 1-80 dilution is suggestive. Cholera vaccination and tularemia give cross agglutination. Undulant fever vaccination affects the test.

IV. Tularemia. Positive reaction in 1-40 dilution or higher is diagnostic. Cross agglutination occurs with undulant fever.

V. Rickettsial Diseases. Agglutination tests using 0X19, 0X2, 0XK are considered suspicious if positive in dilution of 1-80, or positive in 1-160 dilution.

VI. Heterophile antibody

(a) Serum sickness and horse serum may give false positives.

(b) Infectious mononucleosis

1. A titre of 1-56 is considered suspicious and a titre of 1-112 is considered positive if there is no history of the patient having taken horse serum.
2. A titre of 1-224 is considered positive even with a history of the patient having horse serum.

Lymphatic leukemia usually doesn't give a titre above 1-7.

Serological Tests

Serological tests are also available through the State Public Health Laboratories. These are not to be accepted on faith alone. Both false negative and positive reactions occur. Two tests of different types should be reported as repeatedly positive before therapy of syphilis is undertaken.

Serological tests are based on the body's reaction to spirochetes. It takes time for specific reagins to be produced to give a positive serological test. One must not expect a person with a primary lesion to have a positive serological test for from two to six weeks after the initial lesion appears. During this early period, only darkfield examination will make a positive diagnosis.

The new treatments of syphilis have made some difference in the interpretation of serological tests. Serial quantitative tests are of tremendous value in following the effects of therapy.

The new Kline Cardiolipin test is a comparatively simple test for the small laboratory to perform. It takes little equipment. However, unless there is a reasonable volume of tests to be run, I would suggest that they be forwarded to the State Public Health Laboratory.

Bacteriological Tests

Bacteriological examination has become increasingly important with the advent of specific chemotherapy and antibiotics. Unfortunately, bacteriological facilities are not available in many areas of the state. However, many times the white blood count and a Gram's stain will aid in the decision as to whether antibiotics will be effective or not.

Urine Studies

The urine can be investigated as an office procedure, but several precautions should be observed. It is satisfactory to do qualitative tests on a single urine specimen. However, quantitative tests should be run on a portion of a 24-hour specimen. Random urine specimens obtained one or two hours after a meal are the most likely to contain abnormal substances, while the usually accepted first morning specimen is the least likely to contain them.

The following tests on urine can easily be accomplished in the office:

albumin	phenolsulphonphthalein
sugar	Mosenthal
acetone	Kepler-Power water test
diacetic acid	examination of urine sediments
urobilinogen	bilirubin

Tests for albumin should be done on urine which is clear or has been clarified by filtration. The nitric acid ring test, heat and acetic acid test or the sulfosalicylic acid test are all satisfactory.

Glycosuria can be detected by the Benedict's test or by the Clinitest. The latter is much simpler, and although chiefly a qualitative test, will suffice as a crude quantitative test. The Clinitest is adaptable for a patient's use to run fractional diabetic urines.

Acetone, diacetic acid, urobilinogen, and bilirubin tests on urine are extremely helpful as special office procedure when indicated.

Numerous tests for renal function have been advocated. The Mosenthal, or some dilution or concentration test, and the PSP tests are suitable as office procedures and they will give some qualitative information as to the concentrating and excretory power of the kidneys. These tests are in no way a substitute for other kidney function tests, such as the urea clearance, etc., if they are available.

The Kepler-Power water test is of some aid in the diagnosis of deficiency of the adrenal cortex or Addison's disease. It is an easy test to perform. The patient is told to restrict fluids from 10:00 p.m. to 7:00 a.m. and urine for this period (nine hours) is collected. The next morning at seven at the end of the nine-hour period, nine cc of water per pound of body weight is given the patient. (This should be taken as rapidly as possible, time not to exceed one hour.) Four hourly specimens of urine are collected at 8:00, 9:00, 10:00 and 11:00 a.m. If any hourly specimen of urine exceeds the total nine-hour volume, no Addison's disease is present. If none of the hourly specimens exceed the total nine-hour specimen and there is clinical evidence to suspect Addison's disease, further study is indicated. A blood chemistry for potassium, sodium, and 17 ketosteroids will substantiate the diagnosis.

The study of the urine sediment (centrifuged specimen) will often indicate the presence or absence of urinary tract disease. Acute nephritis cannot be treated properly without study of urine for red blood cells and casts.

Biochemical Tests

Blood chemistries, except for a few, can be practically run as office procedure. For the most part, contrary to the belief of most doctors, they are not as technical procedures as a blood count. They do,

however, require well trained technical help and more equipment.

Non-protein nitrogen, blood urea, blood sugar, blood calcium, and blood cholesterol in the hands of a graduate or well trained technician are easily accomplished.

Blood proteins, uric acid, CO_2 combining power, etc., although extremely important, should be left for the larger laboratories.

Gastric Analysis

Gastric analysis is a valuable test in gastro-intestinal disturbances.

The gastric mucosa secretes pepsinogen, renninogen, and hydrochloric acid. The hydrochloric acid activates these enzymes into pepsin and rennin. The hydrochloric acid also combines with proteins to form acid metaprotein. The latter is measured as "combined" acid.

Normally the stomach secretes gastric juice when stimulated by the presence of food; therefore, gastric analysis is usually made after a test meal.

Contraindications to gastric analysis

1. Stenosis or malignant tumor of the esophagus
2. Aoartic aneurysm
3. Esophageal varices
4. Cardiac decompensation
5. Allergy (histamine)
6. Recent hemorrhage

Types of tube

1. Ewald or Boas
2. Levin
3. Rehfuss

Types of test meals

1. Ewald—arrowroot cookies and water
2. Alcohol—50 cc of 7% alcohol
3. Histamine—.25 mg histamine dihydrochloride or diphosphate.

Examination of gastric contents should include:

1. Quantity
2. Color
3. Odor
4. Mucus
5. Reaction
6. Acids
7. Pepsin
8. Rennin
9. Blood
10. Bile
11. Cells

In conclusion, I have attempted to enumerate some of the advantages and deficiencies of laboratory procedures. No attempt has been made to discuss all laboratory procedures, rather a few tests readily adaptable as office procedures have been discussed.

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May 15-18, 1950 **Wichita, Kansas**

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The scientific program, presented by a group of outstanding guest speakers, will be of interest to general practitioners as well as specialists. The specialties represented and the speakers who will take part are as follows:

Anesthesiology	John Adriani, M.D., Tulane University New Orleans, Louisiana
Dermatology	Arthur Robertson Woodburne, M.D. Denver, Colorado
E.N.T.	Paul M. Moore, M.D. Cleveland, Ohio
Eye	John C. Long, M.D. Denver, Colorado
Internal Medicine	Cyril Mitchell MacBryde, M.D. St. Louis, Missouri
	Samuel Bernard Nadler, M.D., Tulane University New Orleans, Louisiana
	Sloan Jacob Wilson, M.D., University of Kansas Kansas City, Kansas
Obstetrics and Gynecology	Edward Needham Smith, M.D. Oklahoma City, Oklahoma
Orthopedics	Harold Augustus Sofield, M.D. Chicago, Illinois
Pediatrics	James Bosma, M.D., University of Utah Salt Lake City, Utah
Surgery	Virgil Sheetz Counseller, M.D., Mayo Clinic Rochester, Minnesota
Urology	Grayson Carroll, M.D. St. Louis, Missouri

Scientific Exhibits

The Committee on Scientific Exhibits, James B. Fisher, M.D., Chairman, solicits the cooperation of all members of the Society in presenting an outstanding series of exhibits this year. Members are requested to make reservations for space now, giving the titles of their exhibits, the amount of space required, and a list of equipment needed, electrical outlets, tables, chairs, etc. Reservations for space are to be sent to

Scientific Exhibits Committee
1003 Schweiter Building
Wichita, Kansas

PRESIDENT'S PAGE

Dear Doctor:

You have gone through a strenuous and trying war period. You have been overworked. There has been strain and stress, not the least of which is the threat that your liberty will be taken from you by bureaucrats in Washington. It may now be time to take inventory, perhaps a rest, possibly a check up. You are an important and expensive necessity in your community and your services must be preserved. It is your duty, not only to yourself and your family but to your community, to look well to the maintenance of this valuable mechanism.

In our professional duties our emotions are played on from morning to night. Too often this results in poor professional relations; too often our motives are misinterpreted, resulting in distrust and dissension among ourselves. The most devastating consequence is that the doctor's judgment and perception become warped, which does not work toward the best interests of the patient; therefore, take care of yourself, relax, it may be later than you think.

A few days ago we had the pleasure of presenting the Second Annual Kansas Medical Day at the University of Kansas School of Medicine. Some 165 junior and senior students were present. The intent of this day is to help round out the students' education in showing what the practice of medicine consists of, its financial, legal, ethical and social aspects, and to interest the students in remaining to practice in this state. Had all Kansas doctors found it possible to be present for this occasion, not the least benefit would have been their inspiration at seeing the fresh enthusiasm and idealism of these splendid young men and women. It would have renewed your confidence in the future of medicine and have given you a warm, comfortable feeling of pride in your medical school.

Sincerely,

Haddon Peck, M.D.

President.

EDITORIAL COMMENT

Postgraduate Education in Kansas*

At the conclusion of World War II, the doctors returning to civilian practice almost universally felt the necessity for refresher courses in medicine. To fill this great need such courses were established in all branches of medicine, similar to those in therapeutics which had been given for some years at the medical school under the auspices of the University Extension Division. For this expanded series of courses a new department, Postgraduate Medical Education, was established. This was made possible through the voting of special funds by the state legislature and the very important interest and assistance of the Kansas Medical Society.

Mr. Harold G. Ingham, for many years Director of Extension for the University, but whose real love was medical extension, came to the medical school as Director of Medical Extension in this department. Our courses are of four types: (1) short courses, two to six days, given at the medical center on succeeding days; (2) continuation courses, the same day each week for 6 to 12 weeks, at the medical center; (3) circuit courses given at various centers in the state; and (4) the in-residence training. This covers different courses with varying periods of training of one month to one year. As the present building program at the center approaches completion, this type of training can be offered in more departments of the medical school.

In choosing and arranging these courses a committee of the Kansas Medical Society sits with representatives from the medical school faculty and the State Board of Health. In addition to deciding types of courses, the individual topics, and the faculty—local as well as guest speakers—are discussed, with a view to presenting to the physicians of Kansas such scientific medical themes as are felt needed.

For the present 1949-50 series of 16 courses some 55 distinguished guests, leaders in their respective fields from all corners of the United States and Canada, are being presented, in addition to many guests from among the practitioners in the state of Kansas, and from the faculty of the medical school.

The attendance at the postgraduate short courses at the medical center for 1948-49 totaled 755, the continuation courses 86, the circuit course 275, and nursing education 243. Attendance for the present 1949-50 series is in advance of the previous year. This is indeed a remarkable coverage of the doctors of the state of Kansas. With the completion of new facilities for this department, now under construction, possibilities for more successful and comfortable accomplishment of the desired end of carrying medical education to our practicing physicians of the state of Kansas will be greatly enhanced.

And one more of the plans of the dean and faculty of the medical school will be brought to fruition. We now look forward, as facilities are made available, to the possibility in the not too far future of offering many in-residence training programs of varying lengths of time of one or more months. All of this adds up to the ideal of *continued medical education* for the doctors of Kansas.

*Prepared by Edward H. Hashinger, M.D., Chairman of Department of Postgraduate Education.

Thomas Grover Orr: Scholar, Surgeon, Samaritan

Editor's Note. Following is an address presented by Owen H. Wangensteen, M.D., Department of Surgery, University of Minnesota, on the occasion of the unveiling of Dr. Orr's portrait at the University of Kansas School of Medicine, November 21, 1949.

It is a real privilege to have the pleasure of being here on this very important occasion in the annals of the medical school of the University of Kansas. Moreover, it is fitting that officers of the state of Kansas and members of the faculty of medicine of your university and erstwhile pupils and associates of Dr. Orr come together to invest this moment with dignity and the charm of happy recollection. This hour gives eloquent testimony of the respectful and affectionate regard the people of Kansas have for Thomas Grover Orr. This is Dr. Orr's day in Kansas! And well it might be in the nation. The community, the state, the nation, yes the world—all have an interest and stake in our public institutions and the men who give them leadership.

In this community, Dr. Orr has spent 35 years in arduous and fruitful activity in his chosen field of work. For 25 years he has been the director of the destinies of the Department of Surgery in your university, during which time investigations pursued here have made the influence of the medical school of Kansas felt in the remote corners of the world. These researches have brought renown to your university and the regard and esteem of leaders in the medical world to Dr. Orr.

In a way, it is a bit anomalous that honor is done to deserving individuals when they take leave of university faculties. This, however, is traditional and it is a custom which perhaps will never change. It is very proper, however, on an occasion such as this to try to convey to Tom Orr the deep sense of appreciation we all share for a full life spent in the service of his fellow man. We who have been privileged to come within the radius of his influence cherish that association with pride and affection. Dr.

Orr's interest in the young aspirant for a career in surgery is well known to many. It is a pleasant duty for me to acknowledge here that he sponsored my candidacy to the Western as well as the American Surgical Associations, long before considerations of eligibility had occurred to me. Undoubtedly, Dr. Orr has anticipated many a young man's unexpressed yearnings for the approbation of his peers.

Friendship is the noblest relationship between men. A good yardstick of a man's ability might well be said to be his capacity for friendship. And when the warmth of that handclasp is felt by earnest, sincere young men, is it any wonder that they treasure in their friend this new found enlargement of the common nature with unbounded enthusiasm? And as future generations of medical students meet the steady searching but sympathetic and gentle gaze of Dr. Orr's portrait, let them be reminded that here was a modest Kansan, as great in his humility as in his achievement, respected and revered by his associates—a man in whom the love of his fellow man was great.

Said Abou Ben Adhem, in Leigh Hunt's poem, when visited by the recording angel:

"I pray thee, then,
Write me as one that loves his fellow-men.
The Angel wrote, and vanished. The next night
It came again with a great wakening light,
And showed the names who love of God had
blessed,—
And lo! Ben Adhem's name led all the rest!"

Of this mold is Tom Orr.

Dr. Orr has left his impress upon many fields of activity in surgery. His contributions to our understanding of the problem of intestinal obstruction, made jointly with Dr. Russell Haden, formerly of this faculty, are well known. Those important papers had much to do with the reawakening of medical men's interest in the lethal aspects of bowel obstruction. Dr. Orr's early interest in the engaging problem of water and electrolyte requirements of surgical patients has excited the concern of others, an important side chain reaction of all research. Studies of shock, surgical infections, problems of wound healing, the interesting hepato-renal syndrome, and various forms of hernia have absorbed his attention; moreover, these studies have been helpful sources of instruction to others. His many contributions to the surgical management of many visceral malignancies, especially of the pancreas, are deserving of careful study by everyone who effects a serious interest in these conditions. His two monographs on Amputations and Operations of General Surgery are widely read. Both give eloquent evidence of their author's erudition as well as his broad perspective of a wide range of important surgical subjects. Moreover, Dr. Orr's unceasing industry over long years is evinced clearly in this brief recital of his productive and literary labors.

But what is labor when a man's heart is in the effort? It is interest that makes burdens light. And when it stirs and grips a man's imagination, the work becomes pleasure. An awakened imagination shortens the hours of toil and sweetens the labor. While the body tires, the spirit is refreshed. Ah, happy that man who has found abiding satisfaction in his work! And when that labor concerns the betterment of his fellow man, can work be more satisfying? Man hungers for many things. I believe it would be within the fact to suggest that the abiding satisfaction of contented industry appeases the hunger of a man's soul as completely as the yearnings and cravings of man's spirit can be met in this life.

Those of us who have been privileged to observe Dr. Orr's keen pleasure and his calm enjoyment of home and family know how complete his happiness has been. Those of you whose hair is as white as mine can appreciate the truth of Tennyson's suggestion in the choric song of the Lotos Eaters: "There is no joy but calm!"—Dr. Orr has always irradiated a tranquillity and serenity of soul that many of us have striven less successfully to achieve.

Dr. Orr has been a part of this community so long it would ill befit me to come here to attempt to relate to you things concerning him which already you know at first hand. He has been a strong force in this medical school, in the community, yes in American surgery. Moreover, he is held in affectionate regard by a host of admiring friends and colleagues. We have assembled today to do him honor for those rare qualities of warmth, strength and modesty which stamp him as the man you and I know him to be. At a time such as this, it is proper to voice our common sentiment of sincere and reverent gratitude for the circumstances and ties which joined forces to give us a person like Tom Orr. And rather than attempt to assess what happy combination of elements gave him to you as you and I know him, I have thought it more suitable for the occasion to discuss some of the items of circumstance and fealty which influence the surgeon's work and determine whether success or failure will attend his journey and mission in the voyage of life.

Yesterday, Today and Tomorrow

It is easier to look 200 years backward than five forward. Yet life has to be lived looking forward, though we only understand it looking backward. It is important on occasions such as this to attempt to look even dimly into the future. It is said of your mythical bird, the Jayhawk, which is alleged to fly backward, that he is more interested in where he has been than where he is going. This legend must place

a great stretch upon the credulity, even of a Kansan. It is the devout task of the historian to keep the past alive for us. While we speak the names of those persons who have contributed to our well-being with piety and reverence, let us turn our faces squarely toward the future. Kansans have a way of looking into the mouth as well as into the eye of things other than horses.

A moment ago I touched upon the writing of books. There are prophets of an earlier day, who affected to believe and attempted to communicate the conviction to others that nothing of any merit could come from a pioneer area beset with the absorbing tasks of carving its way out of wilderness. How short is the memory of man! Has that not always been the history of civilization? Some of you will remember that Sydney Smith was constrained to write in the Edinburgh Review concerning the self-adulation of Americans—and we admit freely that we are not slow in detecting the praiseworthiness of our own efforts. Said the Reverend Smith, in 1820: "In the four quarters of the globe, who reads an American book? or goes to an American play? or looks at an American picture or statue? What does the world yet owe to American physicians or surgeons?" Who then could have foreseen the long list of distinguished writers, artists, physicians and surgeons, and scientists who would arise here in the geographic heart of America? In his brilliant Phi Beta Kappa address of 1837, Emerson spoke out in somewhat angry tones to this vexed and impatient pontification, with far better evidences of the true inspiration of a major prophet.

Yes, all that Emerson predicted for America, and more, has come true. In 1891 Henry Cabot Lodge wrote concerning: "The Distribution of Ability in the United States." He observed that, whereas little Massachusetts had 2,686 authors, orators, philosophers and builders of States, eight western states ranging from Ohio to California had only 641. Neither Kansas nor Minnesota merited mention. Lodge avoided affecting the role of a prophet with reference to his data culled from Appleton's Encyclopedia of American Biography covering the preceding 100 years. He did make one observation, however, which has important connotations even for us today. The most important result of the inquiry indicated that the people who have produced the ability of the country are "those who became most quickly and most thoroughly Americans." On this basis alone, Kansas, which has been described as the very child of Plymouth Rock, has a great destiny.

It is not enough to provide books and opportunity for study. Our teachers must strive to instill in the pupil a genuine interest in and love of books and study. That is the most difficult task of the teacher. It is in this sphere that the gift of the spirit makes its influence felt. Teachers like Dr. Orr, who create about them an atmosphere of happy endeavor, become the leaders of inspired youth. This emolument of the pedagogue in terms that the spirit of the true teacher can appreciate, should recompense him in part for the lack of pecuniary support with which society rewards the efforts of the school teacher.

Sources of information (J. Gunther 1947) suggest that a surprisingly large percentage of our population in states such as Kansas and Minnesota are without access to libraries. This is not true in Minnesota. However close the radio and television bring us in contact with what is transpiring in the world, there is no substitute for a collection of books. They give us instruction and charm us at the same time. We cannot fly daily to good friends to find that comfort, consolation, solace, and sympathetic understanding which lie at our very elbows in our favorite books. They shape and mold our lives without reproving us. In them resides the immortality of the ages. Let men strive to mirror their lives after a good book; yes, the Good Book is a perfect model. In this atmosphere, where for long years many members of your distinguished faculty with a keen zest for the exploration of the medical lore of our predecessors have taught the love of books, it is not necessary for me to belabor the point.

The Loyalties of Men

We all have many loyalties. We are beholden to many persons and things: to our parents, our environment, our teachers, our associates, our families and our country. The chief loyalty of every man, however, is to the deepest and most satisfying want of his innermost being. It is the youth who becomes absorbed with an overpowering and sustained passion to achieve something for his fellow men who finds happiness and success for himself. Dr. Orr's life-long devotion to the disciplines of surgery gives evidence of his loyal and faithful devotion to his work, including the opportunities and responsibilities which it encompasses.

If in this or any community, citizens have achieved financial success beyond the needs of personal or family security, examination of the very nature of loyalty will suggest to them that they should give liberally to the institutions of learning in their own communities. All the citizens of this great Midwest need to learn this lesson. We live in that section of our country characterized by great state universities. We often hear it said here: "I support the university through the agency of taxation; that is enough." I say it is not enough. We in the Midwest must take an even greater pride in our public institutions than we profess.

The wealth of these great midwest states is not such that large sources of monies can be placed at

the disposal of our universities and medical schools for purposes of research. Yet the whole life-line of progress is linked to research. Neither your medical school nor mine had risen above mediocrity until members of our faculties concerned themselves with research. While we strive to indicate to the representatives of our state governments that only research can break the shackles of speculative rationalization and improve our conditions of life, let us also have them understand that we must also look hopefully and expectantly to local private sources of wealth for generous support of research. When that comes about, starred scientists will not migrate as readily into areas of greater opportunity. And the future of your medical school and mine will be assured because our faculty lists will contain the names of many ardent seekers after the light. It is in institutions where that catalytic influence is at work that the leaders of tomorrow are in the process of development today. The promised land, like the Kingdom of God, is within our very selves.

When we in our own communities learn to appreciate this important aspect of the philosophy of loyalty; when our pride in our public institutions of learning is no longer catatonic in its apathy; and when that pride transcends lip service and secures the full and loyal support of men of courage, influence, strength, vision and wisdom—our public institutions will vie for honors in the service of our country and our fellow man with the best that the world has to offer.

The matter of learning to see eye to eye on common problems is an item which commands the serious attention of individuals, communities, states, and nations. Longfellow, in his beautiful poem Evangeline, described the search of Gabriel and Evangeline for each other which terminated successfully on Gabriel's death-bed in a Philadelphia almshouse. He was trying to exhort individuals and nations to see eye to eye while there was still time. The interdependence of the people of a community and its public institutions of learning is great. Both should strive to bring to the other the best service of which it is capable. We must all learn to be obedient to what is best for us. In that way lies our greatest destiny. We have real need of one another. The division of labor has brought comfort, convenience, health and leisure to all of us. Each of us must bring his gift to the community; it, in turn, rewards us richly beyond what we could have done for ourselves. This growing concept of the nature of community responsibility should become a precept for all of us. A true appreciation of what our respective communities mean to us individually should fill most of us with a sense of high privilege and deep obligation.

What Are The Criteria of Success?

We know very little about the criteria which foretell success. The prophecies of the seers of football go awry because of unexpected upsets. The successful person learns to right himself quickly after failure through lessons learned in the self discipline of suffering. No man ever achieved real distinction who failed to survive the "slough of despond."

Fatigue of the spirit, whether in situations or personal relationships, has been many a man's undoing. It is a very human failing, and you and I must constantly be on the alert lest our best intentions be nullified by this dangerous and stealthy enemy. Steadfastness under difficult conditions tries a man's soul but builds an inner strength. Men who look to ready agreement or who can withstand only putty-like resistance or opposition never become courageous leaders. The farmer puts an edge on his sickle with an emery wheel. A man who has come to wield an important moral force, like Dr. Orr, has survived opposition, in which process he has learned to accept criticism with good grace.

The motivations of his life are matters known only to Tom Orr. I would guess that as a boy he sang or whistled while at his work; that he bore his burdens without complaint; he may have made orations in the cornfield. I am certain that he built castles in his imagination, tore them down and built them up again. Later he devised experiments and operations and probably toyed with them in his mind's eye long before they were executed. In this manner, the successful general wins his battles, actually long before they are fought. Thoughtful imagination is the master of strategy, amongst surgeons as well as generals.

The loyalty owing our environment is deserving of careful examination by everyone. We are all in a sense the products of external circumstance. See how Abraham Lincoln, Franklin Delano Roosevelt and Winston Churchill responded to the demands of their time. Could there have been a Lincoln without the problem of slavery? Could there have been a Churchill or a Roosevelt without the threat of Fascism? Must a hero rise to combat the spread of Communism in the same manner? Must our tests and battles of life always be won in the Gethsemane of suffering? Will we never learn enough of the art of living at peace with ourselves and our neighbors to rise above our differences in more peaceful ways? We all learn to be philosophic about past and future difficulties. Must distressing problems of the moment overcome all our philosophic pretensions and throw us into emotional and intellectual confusion? Yes, even our governments, whose spokesmen profess to be the most mature and enlightened statesmen of our time, like you and me, are not as

philosophic over current problems as they should be. Must we in such conflicts affect the part of a bully, calling every nation which differs with us an enemy, and attempt to beat him to his knees? It is strange how we seem to be able to compose our difficulties when one of us is vanquished. Must it always be so? True friendship, compounded of sincerity, mutual respect and fostered by an affinity and kindredness of spirit, out of which grows a sympathetic understanding, is as necessary for amity amongst nations as well as in personal relationships. We must strive to understand our neighbors in other countries, who differ with us, or we can never have lasting peace. Only villains and scoundrels need to be overcome by force.

Our federal government expends approximately 85 per cent of its annual revenue to suport the cost of past and the possibility of future wars. What a sad and tragic commentary on our failure to see eye to eye with those who differ with us. If that money were spent for the betterment of man's state, what a utopia this might come to be! How research institutes would flourish to bring comforts, conveniences, enlightenment and health to man! Those of us who are approaching the twilight of our lives may not live to see the day when nations will no longer resort to war to settle their differences. Perhaps our children or their children may. The outlook can only be brighter when we have intelligent and inspired leaders who are willing to resolve differences by waiting patiently for the counsel of hope and the vision of time. The admonition of Revelations speaks forcibly to this point: "He that leadeth into captivity shall go into captivity: he that killeth with the sword must be killed by the sword. Here is the patience and the faith of the saints."

The world is, always was, and probably will continue to be in ferment! Change and progress have always meant conflict with some area of society. Complete content of the human spirit is unfortunately brief. We feel it most on holidays like Thanksgiving and Christmas. Can not nations learn to compose their differences and disagreements in manners which necessity imposes on smaller segments of peoples? Must mists and shadows overwhelm us with fear? Can not nations learn to dispel fear without dreadful purges of human life? Is not the society of the world but an enlargement of the community? In the various communities of life we can do well to emulate the Samaritan who was a good neighbor to his fellow man. Let us hope with Lowell that even if:

"Daily with souls that cringe and plot
We Sinais climb and know it not."

There has been a gradual shift of sentiment here and throughout the world with reference to the uncertainties of the future, from a feeling of buoyant confidence and hopeful expectation to one of anxiety and foreboding. The more we have emphasized the need of greater security for our physical lives, the less security we have achieved within ourselves. Such has been the curse and apprehension engendered by recurrent wars. Why this continued chant of fear, suspicion, and war? What if we strove with the same concern to detect some of the praiseworthy qualities of our fellowmen with whom we fail to see eye to eye? May not such an attitude restore confidence and lessen fear? May it not supplant suspicion with understanding and make us feel more secure with reference to the future? May it not bring the promise of peace, where there is now the constant threat of war?

It is not in the profession of moral rectitude that man most closely expresses his divine nature. It is not in meting out justice; unless justice is tempered with mercy, justice can be cold and harsh. Most of us, in fact, all of us, look with more tolerant indulgence upon our own weaknesses than upon those of others. When we learn to view our neighbor's infirmities with the same indulgent attitude that we apply to ourselves, we may begin to understand him. When more sympathetic understanding for our fellow-man becomes widely diffused throughout this world, fear, suspicion, and the threat of war, which fill men's minds and hearts today, can be replaced by confidence, trust, and the promise of peace.

Let us be watchful; let us not delude ourselves. Let us not intoxicate ourselves with hope, but let us strive to understand our fellow-man. Intrinsically, he is probably very much like you and me. And all the experience of history teaches that what happens to our fellow-man concerns us, too, for in the final analysis we rise or fall together. If we put our fears aside, perhaps he would too. If we replaced suspicion with trust, might not he? Is there any other way to abrogate war and insure a more lasting peace? How else may we shake off the psychology of fear and the consternation in which we are gripped?

Failure As A Guide To Success

Successful surgeons, like Tom Orr, learn to implement failure as a guide to success. In the progressive clinic, every failure is examined critically with a view to determining how the milk was spilled; the question of who spilled it is of far less importance. Nations, yes, our nation, would do well to focus the brilliant light of careful scutiny upon our failures to achieve peace without war. The motto of Kansas could well be a surgeon's guide as well as that of nations: "Ad astra per aspera." Whereas our citizens may sometimes suggest that we think this

means relief through aspirin, it signifies, on the contrary, that the stars may be reached by surmounting difficulties. As Dr. Orr looked up the steep ascent of Jacob's ladder leading to success, he probably kept the inspiration of this motto constantly in the focus of his mind's eye. Success can not be commanded; it must be deserved. Some of the solid rungs upon which he made the climb have been enumerated. Everyone here today, I am certain, rejoices that Dr. Orr had the courage and the constancy to undergo the sacrifices and the toil which the effort demanded. Ropes of sand afford no help in scaling the ladder to academic distinction. To those who gave him assistance and encouragement and helped him overcome fatigue of the spirit during the long, steady ascent, we are equally grateful. Here he is now, calm and serene with no manifestations of breathlessness, in the full vigor of life, exhibiting little or no evidence of the wear and tear that such strenuous years make upon most men.

He who has suffered pain learns to know joy. But the full enjoyment of pleasure requires a sense of gratitude. In order that we ourselves may be able to share with Dr. Orr and his family a full measure of pleasure in the joys that have come to them, let us try to express on this happy occasion our great gratitude for an exemplary and a successful life. And as Tom Orr, Surgeon, Scholar and Samaritan, approaches the contemplative years, let our joint wish for him be that, just as the afterglow of sunset in the western sky restores for a brief time the light of day, so too his meditations upon days of earlier feverish activity will bring back to him many agreeable memories of pleasant labors and associations.

COUNTY SOCIETIES

A meeting of the Sedgwick County Society was held at the Broadview Hotel, Wichita, on February 7. Dr. Paul H. Holinger, associate professor of laryngology and professor of bronchoesophagology at the University of Illinois, was guest speaker. His subject was "Indications for Bronchoscopy in Pulmonary Disease." The next meeting will be held on March 2 with Dr. Albert V. Stoesser, of the University of Minnesota Medical School, speaking on "Uses and Abuses of Anti-histamines."

* * *

A dinner meeting of the Brown County Society was held February 3 at the Hotel Redmon, Hiawatha. Guest speaker was Dr. Winstan L. Anderson, Atchison, councilor of the first district.

* * *

Members of the Stafford County Society were hosts at a meeting of the Mid-Kansas Medical Society held at Harper's Cafe, St. John, January 30. Guest speaker for the scientific program was Dr. Galen M. Tice, radiologist from the University of Kansas Medical Center.

* * *

The Franklin County Society met January 25 at Ransom Memorial Hospital, Ottawa. Dr. Herbert Hamel, Kansas City, Missouri, addressed the meeting on "Disabilities of the Foot."

* * *

Dr. Haddon Peck, St. Francis, was guest speaker at a meeting of the Cowley County Society held January 18 at the Winfield Country Club. He told of the aims and objectives of the Kansas Medical Society.

* * *

A meeting of the Shawnee County Society was held February 6 at the society's office. Dr. William T. Sinnidge, Kansas City, spoke on "Differential Diagnosis of Hypo and Hyper Metabolic States."

DEATH NOTICES

ROBERT MARION MARKHAM, M.D.

Dr. R. M. Markham, 87, an honorary member of the Crawford County Society, died at his home in Pittsburg January 30. He was graduated from the University Medical College of Kansas City in 1892 and began practice at Scammon, retiring three years ago. He was active in civic affairs and had served as mayor of Scammon and president of its men's commercial club.

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FRANK FONCANNON, M.D.

Dr. Frank Foncannon, 60, Emporia surgeon, died at an Emporia hospital February 1 after a short illness. He began practice in Emporia 35 years ago, immediately after his graduation from the University of Pennsylvania School of Medicine in 1914. He was active in medical society affairs and had completed his second term as councilor for the Fourth District of the Kansas Medical Society last spring.

* * *

EUGENE PILE, M.D.

Dr. Eugene Pile, 90, who had practiced medicine in Sumner County more than 60 years, died at Holton February 14. He was graduated from the Missouri Medical College, St. Louis, in 1883, and practiced first at Cleardale and Portland, moving to Ashton in 1915 and practicing there until his retirement. He was made an honorary member of the Sumner County Society in 1936.

Case Report from the University of Kansas Medical Center

Pulmonary Death, Eosinophilia, Prolonged Gastric Symptoms

Clinical Pathological Conference

Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of weekly clinical pathological conferences participated in jointly by members of Departments of Pathology, Internal Medicine, Surgery, and members of Junior and Senior Medical Classes.

Clinical Presentation

B. J., a 38-year-old white female entered the Kansas University Medical Center March 25, 1949, and died March 30, 1949.

Her chief complaint was gastric ulcer, pneumonia, weakness, fever, and dyspnea. The history of the present illness revealed that the patient had noted the onset of vague ulcer symptoms three years ago, prior to present admission, consisting of epigastric distress particularly in the morning, and this was relieved by eating. X-ray showed no ulcer but her symptoms persisted and she was placed on a Sippy regimen, with symptomatic relief for nearly six months. The patient then began deviating from the strict ulcer regimen. There was a recurrence of symptoms. Diagnosis of ulcer was then made by x-ray. The patient returned to a strict diet, which gave her relief. She did well until five weeks prior to admission here, although her husband stated that for three months she had not seemed as well as usual.

Five weeks prior to admission, there occurred chest pain chiefly in the anterior bases and in the back. This pain seemed pleuritic in character and became progressively worse. It was accompanied by persistent low grade fever and a dry hacking cough. The patient went to bed four weeks before her admission here, and two weeks before the present admission she entered her home town hospital for treatment. Food or liquid by mouth was nauseating and resulted in vomiting about two hours after ingestion. The patient suffered from intermittent gastric pain, weakness, and dyspnea and lost 14 pounds in one month. She remained in the hospital two weeks and was then transferred to the Kansas University Medical Center for further study and therapy.

Laboratory studies prior to admission here were as follows: chest x-ray showed diffuse marked infiltration. No acid-fast bacilli were seen in sputum examinations. Sputum showed only gram positive encapsulated diplococci and pus cells, and Wright stain showed no fungi or yeast. The pus cells were 90 per cent eosinophiles. Papanicolaou stain was non-contributory. Urine was negative. Complete blood examination showed 11.5 grams Hb, 3,700,000 Rbc's, 16,000 Wbc's, with a differential of neutrophiles 58 per cent, stab cells 14 per cent, small monocytes 14 per cent, large monocytes five per cent, and eosinophiles nine per cent. KUB and IV pyelograms of the dorsal spine revealed slight lipping. Fluoroscopy of the stomach showed an elongated organ of J type with a relatively shallow flat-based ulcer mid-way on the lesser curvature with prominent rugae and some scarring around the margin. Management at that hospital consisted of penicillin, aureomycin, Sippy regimen, Amigen intravenously, sedation, antihistaminics and IV fluids. Many febrile reactions with chills followed the administration of parenteral fluids. During the previous hospital stay and one week prior to admission here, the patient vomited blood following which tarry stools were passed for several days.

In the past history, the patient had been well all her life except for scarlet fever four years before this admission.

Family history was not contributory.

The system review revealed irregular menstruation with improvement during thyroid medication. Two children were born to her, full term, normal deliveries and both are living.

Physical examination showed a well developed, moderately undernourished white female appearing extremely pale, dyspneic, and acutely and chronically ill. Mucous membranes and skin showed extreme pallor and some dehydration. Breasts were not unusual. There was generalized diffuse dullness to percussion bilaterally over the lung fields. Tactile fremitus was increased. Breathing was bronchial in character with occasional moist crepitant rales, particularly in the bases. Pulse was 120, regular, and small. Blood pressure was 110/76. PMI was felt three cm. lateral to the mid-clavicular line and in the fifth interspace. A generalized soft precordial murmur was heard loudest at the mitral area together with a pulmonary systolic murmur. Hepatomegaly was present with sharp-edged liver four fingers below the costal border in the mid-clavicular line. The liver was slightly tender. The spleen was not enlarged to palpation. There was a slight diffuse tenderness of the abdomen, but no distention or fluid wave. Fingers were moderately clubbed. No lymph nodes were palpable.

Laboratory examination during the present admission showed the following: urine negative. Blood study revealed 2,400,000 Rbc's, 19,950 Wbc's, Hb 6.7 Gm. (43 per cent), and differential of polymorphonuclear neutrophiles 35 per cent, filamented polys 17 per cent, lymphocytes 14 per cent, eosinophiles 36 per cent, basophiles one per cent,

monocytes one per cent, metamyelocytes six per cent, myelocytes seven per cent, and seven nucleated Rbc's per 100 Wbc's. Serology was negative. NPN was 33, creatinine 1.4, blood sugar 100, cholesterol 281 mgm. per cent. Total protein was 5.4 with globulin 1.44 and albumin 3.96. Skin tests with tuberculin, histoplasmin coccidiodin and blastomycin were negative. Sputum culture showed normal flora with N. catarrhalis predominating and no fungi. No acid-fast bacilli were seen in the sputum. Smears showed many eosinophiles. Stools revealed three-plus positive hematest for blood. Sedimentation rate presented a vertical curve 31 mms./hour. Three routine blood cultures were negative and one for fungi showed none. Neither did a sternal marrow culture for fungi reveal any growth. The complete blood study showed an icterus index of three units, platelets 170,000. Beside the anemia, the individual red corpuscles revealed moderate anisocytosis, slight poikilocytosis, normochromia and marked polychromatophilia. Nucleated red blood cells were observed. The reticulocytes were slightly increased in number. A leukocytosis was present, although the increase in cells was mostly mature eosinophiles. However, considerable numbers of metamyelocytes and myelocytes of the neutrophilic series and occasional ones of the eosinophilic series were observed. Complement fixation for histoplasmosis was negative. Sternal marrow biopsy was not reported at the time of death. X-ray and EKG examinations will be discussed later in the conference.

The patient had a fulminating progressively worsening hospital course and died five days after admission. During this time, she had a fever of 99° to 101°. There was persistent tachycardia of 110 to 140/minute. There was a progressive rapid cardiopulmonary failure with increasing pulmonary edema and congestion as manifested by moist bubbling rales throughout the chest. Therapy consisted of complete bed rest, modified ulcer regimen, dihydrostreptomycin, penicillin 10,000 units every there hours terminally, and cardiovascular management including digitalization, aminophyllin and mercuhydrin. The patient received three 500 cc. blood transfusions preceded by an anti-histaminic, which were well tolerated with the exception that there seemed to be increasing pulmonary edema after each transfusion. In the final day of life, there was severe pulmonary edema with moist bubbling rales throughout the chest and persistent hacking cough producing frothy bloodtinged sputum. The patient became increasingly dyspneic and orthopneic. Although she was placed on oxygen first by nasal catheter and later by tent, she still remained orthopneic, dyspneic, and cyanotic. Death apparently was due to heart failure secondary to pulmonary edema and respiratory incompetency.

Dr. Delp (Chairman): Will you present the x-rays, Dr. Tice?

Dr. Tice: A film of the chest in March, 1949, showed diffuse patchy infiltration which looked inflammatory to me. The absence of any distinguishing architecture did not suggest malignant metastases. We considered the possibility of tuberculosis because of the infraclavicular infiltration. However, we decided that this was an inflammatory infiltration of unknown origin.

Dr. Delp: Will you present the electrocardiograms, Dr. Cochran?

Dr. Cochran: A tracing taken three years ago showed the three standard leads within normal limits. The recent tracing on the second day of the final illness showed a marked increase in the rate, a sinus tachycardia. There are no specific significant changes in the QRS complex. T waves were still upright although of lower voltage than previously. CR1, CR3, and CR5 showed only minor ST changes.

Dr. Delp: Will Mr. Ossar present his differential diagnosis in this case?

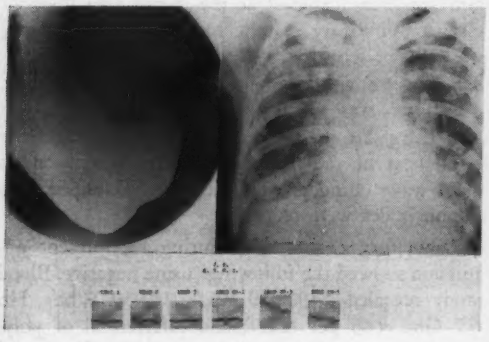


Figure 1. Film of stomach taken five months prior to terminal illness showing nothing which could be interpreted as neoplastic lesion. Film of chest suggestive of infiltration common to fungus infection. Electrocardiogram showing right heart strain.

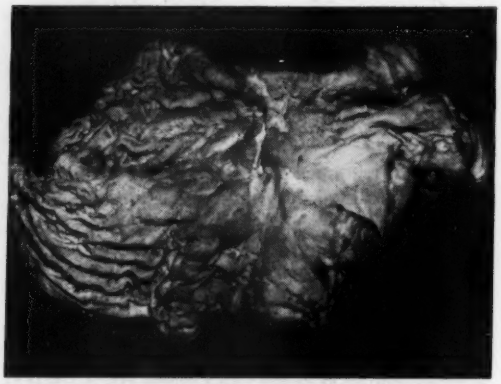


Figure 2. Specimen of the stomach. Upper central field shows ulcerated rolled edge whereas to the lower right there is an area with swollen and scarred edge.

Mr. Ossar (Medical Student): One wonders whether this patient had one disease or two. That is, are the chest findings and the gastric ulcer perhaps unrelated? With the eosinophilia, one can't rule out a malignant ulcer, especially because the present ulcer is on the lesser curvature of the stomach, and such a malignant ulcer can produce an eosinophilia and miliary lesions to the lung.

The stomach ulcer could be tuberculous, although this is very rare. The fact that tests for mycotic infections were all negative tends to rule out such infections. Loeffler's syndrome might be considered except that it usually lasts only one or two weeks with recovery being the rule.

The possibility of Hodgkin's disease must be considered. We saw one of these in the stomach not long ago. I don't know whether Hodgkin's lesions could be so diffusely distributed.

Periarteritis nodosa is possible because this was a sensitive individual. I am not sure how this possibility could be ruled out.

I don't know what the diagnosis in this case might be.

Dr. Delp: What is Loeffler's syndrome?

Student: It is not a disease entity. Rather, it is a syndrome sometimes seen in an allergic reaction to parasites and, more rarely, to fungi.

Dr. Delp: What is the explanation of an eosinophilia of 36 per cent?

Student: Several things can explain such eosinophilia, such as parasitic disease, allergic manifestations, or mycoses.

Dr. Delp: What is your best diagnosis?

Student: Loeffler's syndrome.

Dr. Delp: Why did the patient die?

Student: From a reaction to transfusions and from the pneumonia.

Another Student: Because of malignancy.

Still Another Student: From a diffuse collagen disease, probably allergic.

Dr. Delp: This case presented several interesting features. I discounted the finding of occult blood because we saw no blood vomited nor gross blood in the stool. I attached significance to the marked anemia, dyspnea, and tachycardia. They are salient features. The chest infiltration I considered important, although it may have been misleading. The eosinophilia was confusing to me.

I could make no single definite diagnosis, but I could and did set up a differential diagnosis. This included histoplasmosis, or some kind of mycotic infection, lymphoma or lymphosarcoma, a malignancy of unknown origin and, of course, the possibility that the gastric ulcer was malignant. The patient died in acute pulmonary edema. Oxygen by catheter inside a tent didn't relieve the cyanosis. This patient had a remarkable reduction in vital capacity. She had a cor pulmonale and the EKG shows some evidence of right heart strain characteristic of cor pulmonale.

Dr. Schafer (Surgeon): I don't think we can discount the gastro-intestinal bleeding and, in view of the ulcer history, I would refer the bleeding to that source—from the gastric ulcer. However, I feel at a loss in attempting to relate the later course of her disease to the gastric ulcer. She may have had an infection. A subdiaphragmatic abscess can produce most of what happened here.

If we choose gastric ulcer as the chief offender, we can't very easily assign malignancy to that ulcer.

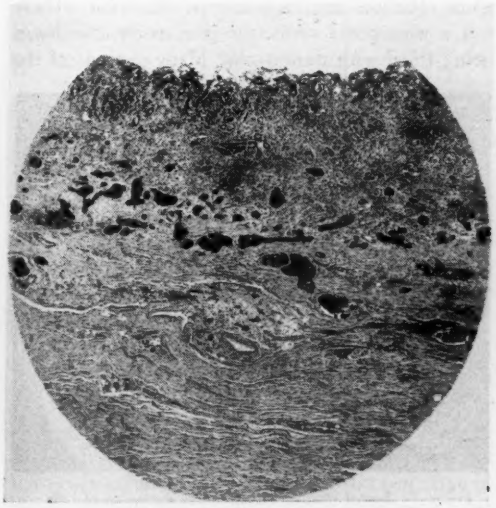


Figure 3. Section showing tumor cells in submucosa and mucosa.

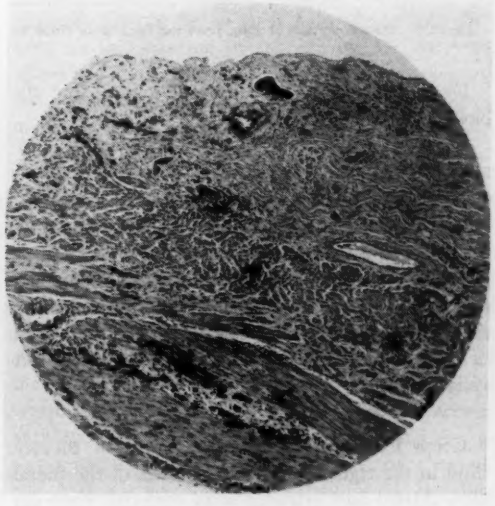


Figure 4. Revealing extension into the mucosa and tumor thrombi.

If it had existed for three years as given in the history, it probably was benign. Of course, perhaps the disease was only of three months duration instead of three years.

I related her anemia to the blood loss from gastrointestinal bleeding plus inadequate food substances for blood building.

My impression would be to relate all findings to the gastric ulcer with a possible subdiaphragmatic abscess and pulmonary infection.

Figure 5. Pleural surface of lung revealing lymphatics filled by tumor.

Dr. Delp: What is your opinion regarding the blood findings, Dr. Wilson?

Dr. Wilson (Hematologist): It's hard to comment on the eosinophilia. Malignancy does rarely cause eosinophilia. It can also be caused by Hodgkin's disease or by most diseases in the gastrointestinal tract.

There was extreme difficulty in obtaining marrow tissue. Whenever this occurs, you must examine the tissue obtained very carefully. The cells were of a bizarre type, foreign to the marrow, were syncytial and probably malignant.

Pathology Report and Discussion

Gross Findings: There was 50 cc. of thoracic fluid in the right side. Lymph vessels of the thorax were dilated and extruded solid material when cut. The heart weighed 250 grams. The liver weighed

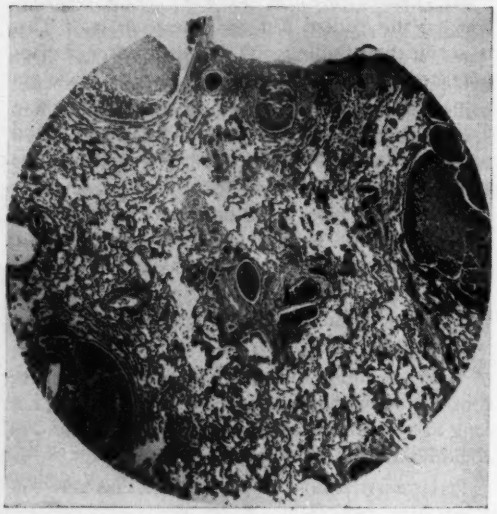


Figure 6. Photomicrograph of pleural surface showing tumor cells in subpleural lymphatics. At the upper border of figure the pleura contains masses of tumor cells in the lymphatics. The central area reveals tumor thrombi in the peribronchial thrombus.

1575 grams and no metastases were seen in it. The spleen was not unusual in weight or appearance. The left ovary contained a small nodule, gray and cellular. The stomach had shallow ulcers of the mucosa with firm lymph nodes on the serosa opposite the ulcers. There were many firm nodes along the aorta, like those on the serosa of the stomach.

Our provisional diagnosis was either a malignancy of the stomach with metastases to the lymph nodes and left ovary or a mycotic infection. We had to wait for the histological examination to determine which of these was present.

Dr. Wahl (Pathologist): Histological examination clinched the diagnosis in this case. There was a widespread neoplastic pneumonia, the lungs being filled with tumor cells. Many sections of the

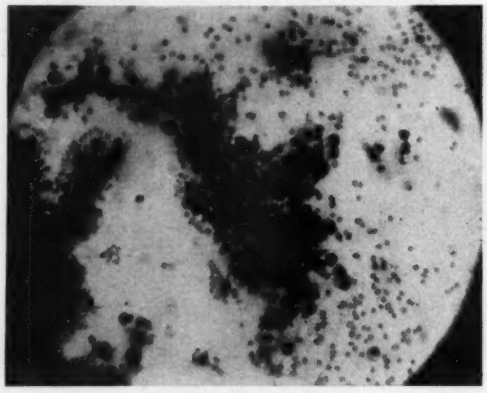


Figure 7. Sternal marrow biopsy. Large aggregates of cells were observed. Vaculated cytoplasm indicated a secretory organ as probably site of primary tumor.

lung suggested lipoid pneumonia but all sections showed tumor cells.

The primary tumor is the ulcer of the stomach, for it is malignant. The lymph vessels from the stomach were packed with tumor cells, distending the vessels and nodes. There were many signet ring cells and these same cell types were in the ovary. Both ovaries were involved. This is typical of a Krukenberg tumor.

The tumor has invaded the lymph vessels to the pancreas although there were no metastases to the liver. Metastasis occurred only to the lymph nodes, lungs, stomach, ovaries, and pancreas.

There was a diffuse infiltrating tumor tissue in the base of the ulcer. One could almost see mucoid formation but the signet ring cells are plainly visible. I think the ulcer was neoplastic from the start.

In a study of 12,350 autopsies performed here, 547 were cancers of the gastro-intestinal tract. Of these, 130 were in the stomach, 130 in the large intestine not including the rectum, and 45 were in the rectum. This contradicts the popular impression that cancer of the stomach occurs oftener than does cancer of other parts of the intestinal tract. In tumors of the stomach, the lesser curvature, the antrum, and the pylorus are the sites for most.

Willis in his book on tumors puts the incidence of cancer from ulcer at less than five per cent of ulcers. Our figures here would place it at five to ten per cent. The Mayo Clinic figures show that in their experience malignancy proceeds from gastric ulcers very commonly. Out of 547 of our GI tract cancers, 59 had ulceration, four were typical Krukenberg tumors. Metastases were found in 63 per cent.

Dr. Stowell (Oncologist): This case illustrates the unusual findings accompanying a gastric tumor. Although unusual, these manifestations should be kept in mind.

Summary

Deserving emphasis is the fact that this patient repeatedly consulted the medical profession telling her story of fear of cancer; and yet, it was not possible to make the diagnosis early enough to save her life. Here is the true picture of why this disease engenders such a feeling of ominousness in its victims and relatives. Here, further, is a vivid portrayal of the extreme difficulty in detection of visceral cancer. The contrary impression only might be gained from popular press material.

This case presented, upon entrance to the hospital, signs and symptoms clearly cardio-pulmonary in character. As seen now, these represented the syndrome of subacute cor pulmonale, a term reserved for widespread neoplastic lymphangitic invasion with encroachment upon the pulmonary bed. Age of the patient and rapidity of onset of pulmonary signs were important factors in obscuring the true pathogenesis of this phase of the illness. Subacute cor pulmonale is much less frequently seen as a clinical syndrome than the better known acute and chronic varieties but is surely not rare.

The presence of malignant cells, detected by the hematologist on routine bone marrow biopsy, is an interesting and instructive feature.

Cosmetics Can Be Dangerous

The steadily increasing use of cosmetics during the past 10 years has resulted in a corresponding increase in reports of skin eruptions due to some ingredient in a cosmetic regularly used by the patient. For more than 20 years the well-established manufacturers of these items have been concerned with this problem and have spent considerable sums of money in order to make certain that no one would become allergic to their products or would develop a skin irritation through usage of the cosmetic.

By insisting on more rigid control of the manufacturing process and a wiser selection of the ingredients to be used, the United States Food and Drug Administration and the American Medical Association have been directing the less responsible producers of cosmetics to give similar consideration to their products before putting them on the market.

Dr. Francis N. Whitacre and Dr. Rita Parcil, of New York City, presented to the members of The American College of Allergists, meeting recently in St. Louis, a condensed summary of this problem for allergists and manufacturers alike.

Their paper listed some 120 ingredients which are now used in cosmetics and cited 81 reports in medical literature of patients who have become allergic to one or another of these substances. This summary should be of great help to the manufacturer in the selection of ingredients, Dr. Fred W. Wittich, secretary-treasurer of the College, pointed out, and should help the allergist identify troublemakers.

Short Term Duty Available in Army

Volunteer reserve officers of the medical corps of the Army may now serve on active duty for periods of from one to 29 days a month, with a maximum of 90 days of active duty per year, according to Special Regulation 140-210-10 of the Department of the Army. The duty will be assigned at an Army installation or activity situated within the vicinity of the officer's home, and no orders will be issued where travel to duty station is involved. However, authorization whereby officers may volunteer as ship's surgeon on an Army transport for a round-trip voyage is given in the regulations. Similar duty is available to reserve officers in the Dental and Veterinary Corps.

KANSAS STATE BOARD OF HEALTH

Teaching Public Health and Preventive Medicine To Medical Students*

The program of study of public health and preventive medicine in the School of Medicine of the University of Kansas has been designed to give the medical student a broad concept or philosophy of the prevention of disease. The student is taught that preventive medicine comprises those activities that are the direct responsibility of the individual physician in the prevention of disease and the promotion of health for his patients. Thus, a large part of any physician's practice will be preventive in nature.

Public Health, on the other hand, encompasses those activities that are undertaken for the prevention of disease and the promotion of health that are a community-wide responsibility. These are usually group activities conducted by health, welfare, educational departments, medical or lay societies, et cetera. The practitioner should know about these activities because he and his patients frequently need them. He should participate in their organization and in maintaining their excellence because the community wishes to recognize his leadership in all matters of community as well as personal health. The physician should be acquainted with good public health practices and procedures because he may be asked to participate as a part-time health officer, as a member of the advisory committee of one or more voluntary health agencies, as a member of a Board of Health or as a representative of his local medical society on a Community Health Council. One of the objects of instruction in public health and preventive medicine is to provide education in those principles through which, as a physician, one may contribute to the maintenance of health and the prevention of disease in his patients and his community.

Sixteen hours of lecture are given in the second semester of the second year as an introduction to the subject, the purpose being to develop in the medical student a philosophy and perspective of public health and preventive medicine in general. A series of 11 lectures is given in the third year covering public health administration on the federal, state, and local levels in both official and voluntary health agencies. The course in the fourth year is divided into lectures, conference sessions for small groups of students, and field trips. The lectures cover the various phases of public health practice, providing direction in the interpretation of public health programs and practices. The conferences are discussion groups and cover preventive procedures in the private practice of medicine, with special emphasis upon the community health facilities and services available through the private physician to his patients. Case situations are presented and discussed. The field trips are made largely to observe provisions for environmental sanitation.

Throughout the entire course in public health and preventive medicine, an attempt is made to so guide the student that he will become aware of the social, economic, emotional and environmental factors which are woven into the medical problems of his patients. The medical student, early in his career, has an almost uncontrollable desire to see and examine sick people, to test his ability at diagnosis and treatment. Has the student during this process considered how this case could have been prevented? Has he considered what effect this illness has had on the patient's family or on their economic position in the community?

The private physician is the keystone of any preventive medical program. If the physician develops an awareness or "point of view" of prevention, and strives to the best of his ability to prevent ill health among the families who have chosen him as their physician, then he can truly be called a master of the art of medicine and a respected physician by everyone in the community.

The undergraduate medical student, if given the chance and proper experience, readily recognizes the fact that the emotional, economic, and environmental features of illness are equally as important as the physical feature. An attempt is made to teach him that the four factors are so interwoven in the patient's subjective symptoms that not one can be considered separately to the exclusion of the others. Consequently, the medical student must learn, during his medical education, to recognize these features in every case as they relate to the medical problems. He must learn how to assume the responsibility, either himself or through community health and welfare agencies, for the satisfactory solution of these social problems as a part of the medical diagnosis and treatment. The student must also understand and accept the responsibility for the preventive medical services of his families, for it is not the individual alone but the family which is the social unit. When one member of the family is involved in difficulties of any kind, all are involved.

Dean Franklin Murphy and the entire staff of the Department of Public Health and Preventive Medicine are thoroughly aware of the social problems of medicine. The teaching program must help the students become well informed and oriented in the

*Prepared by E. V. Thiehoff, M.D., Professor and Chairman of the Department of Public Health and Preventive Medicine, University of Kansas School of Medicine.

environmental, emotional and economic aspects of the practice of medicine. This department should furnish only a part of this training and experience for the students. Thus, steps are now being taken to integrate the teaching of the subject of public health and preventive medicine with the teaching in other departments, especially in the Department of Pediatrics. While the Department of Public Health and Preventive Medicine will have the major responsibility, the philosophy of prevention and the implications of public health should pervade other departments. Arrangements have been made for senior students to serve a preceptorship for 11 weeks with general practitioners throughout the state in communities of 2,500 or less. The student will participate in the practice of the physician under whom he is serving. He will also have an opportunity to observe intimately the environment of many of the patients and to become familiar with some of the social and economic problems of both the physician and the patient.

All in all, this department is attempting to train the medical student to take his place of leadership in all health matters in the community where he may practice as a private physician. This is a part of the "back to the grass roots movement" in Kansas, wherein the practicing physician will aid his community to plan their own health programs to meet local needs, problems and interests.

ACTIVITIES OF MEMBERS

Dr. Milton B. Miller, Topeka, became a member of the board of directors of the Capitol Federal Savings and Loan Association at a meeting held in January.

* * *

Dr. Thomas P. Butcher, Emporia, addressed the Travelers' Club of that city on the subject of "Socialistic Trends" at a meeting held last month.

* * *

Dr. E. V. Thiehoff, professor of public health at the University of Kansas School of Medicine, was one of six Kansans taking part in the second annual United Nations conference, held at the University of Kansas in January. Three United Nations officials came from Lake Success for the conference.

* * *

Dr. L. Claire Hays of Cedar Vale announces that he will maintain an office in Sedan for part-time practice there.

* * *

Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, was principal speaker at the annual Southeast Kansas Farm, Home and Industrial Conference held at Coffeyville January 25 and 26. Dr. Murphy spoke on the Kansas rural health plan.

* * *

Dr. O. C. McCandless, Marion, gave a talk on health before the Marion P.T.A. in January.

* * *

Dr. Charles H. Johnson, Osawatomie, has been elected president of the Osawatomie Chamber of Commerce for the year 1950.

* * *

Dr. Edwin P. Deal, who has been practicing in Greensburg since 1946, announced last month that he was closing his office to move to Snake Falls, Ontario, Canada.

* * *

Dr. Austin J. Adams, Wichita, was featured speaker at a meeting of the Hypatia Club in Wichita in January. His subject was "Our Emotions."

* * *

Dr. M. C. Newman, Topeka, has announced his retirement from practice. His son, Dr. Cloyce Newman, is taking over his practice.

* * *

Dr. John F. Coyle, Coffeyville, addressed the Rotary Club there on February 7, speaking on the subject of socialized medicine.

* * *

Dr. Lottie Law, Hill City, has announced that Dr. William Smith of Stockton will be in her office every Thursday. Dr. Smith is specializing in obstetrics.

* * *

Dr. William Menninger, Topeka, was one of the speakers at the annual meeting of the Association for Supervision and Curriculum Development in Denver last month.

* * *

Dr. E. L. Cooper, Wichita, recently returned from a trip to England. He reported finding only one person, a member of parliament, who approved of the English system of socialized medicine.

* * *

Dr. Charles H. Miller, Parsons, was speaker at a meeting of persons taking part in the cancer drive in the fifth district of Kansas. The meeting was held at Iola February 6. He also addressed the Labette County Cancer Association at its February meeting on the subject of "You, Time and Cancer."

* * *

Dr. Cecil Snyder, Winfield, addressed the February meeting of the Rosetti Club of that city. His subject was "Socialized Medicine and Newer Developments in Medicine."

* * *

Dr. Thomas C. Ensey, Marion, has announced that he will maintain an office in Florence for practice there two days a week.

Report of Constitution and Rules Committee

The Committee on Constitution and Rules with the assistance of the attorney for the Kansas Medical Society has worked for a year revising the Constitution and By-Laws. A large number of amendments are offered for consideration by the House of Delegates at the next annual meeting of that body in May. Proposed amendments to the Constitution must be printed twice in the Journal. The proposed amendments to the By-Laws are also added to enable members to study these before they will be acted upon. Comments and suggestions are welcomed and may be directed either to the executive office or to the chairman of the committee. The following report then, as printed in this and the February issue of the Journal, represents the report of the committee of which A. W. Fegtly, M.D., Wichita, Kansas, is chairman.

Amendments to the Constitution

1. Article I. Name of this Society. Add—hereinafter called the Society.

2. Article IV. Composition of this Society. Section 2 shall be amended to read:

Section 2. The officers of this Society shall be a president, a president-elect, a first vice president, a second vice president, a secretary and a treasurer. All officers shall be elected by the House of Delegates of this Society for terms of office as are hereinafter provided.

3. Section 5 shall be added to read:

Section 5. The delegates to the American Medical Association shall be those members elected to represent this Society in the House of Delegates of the American Medical Association.

4. Old Section 5, now 6, shall be amended to read:

Section 6. The members of this Society shall be the active members in good standing of the component societies, military service connected members, members on leave of absence, the members in good standing of other societies approved by the Council and the honorary members who are elected as provided by the By-Laws.

5. Old Section 6, now 7, shall be amended to read:

Section 7. Guests properly registered and personally vouched for by a member may be admitted to the scientific work of the annual or called sessions.

6. Article VI. Council. Section 1 shall be amended to read:

Section 1. The Council shall consist of one councilor from each councilor district, and in addition the officers of the Society and the delegates to the American Medical Association as ex-officio members.

7. Section 4 now reads: The president shall serve as the presiding officer of the Council. This section shall be deleted.

8. Article VII. House of Delegates. Section 3 now reads: The president shall serve as the presiding officer of the House of Delegates. This section shall be deleted.

9. Article VIII. District Societies. Now reads: The House of Delegates and the Council may provide for the organization of such district societies as will promote the best interests of the medical profession: Provided, that each district society shall be composed exclusively of members of component societies within that councilor district. This article shall be deleted and subsequent articles renumbered consecutively.

10. Former Article IX now Article VIII. Annual Sessions. Section 1 shall be amended to read:

Section 1. This Society shall hold annual sessions which shall be open to all registered members and guests.

11. Former Article X now becoming Article IX. Terms of Office and Elections. Section 1. The clause "and shall continue until the close of the following annual session" following the definition of terms of office, shall be deleted as superfluous.

12. Former Article X now Article IX. Section 2 shall be amended to read:

Section 2. The officers shall be elected by the House of Delegates at the last meeting of that body in each annual session and in the manner provided by the By-Laws.

Section 3 shall be amended to read:

Section 3. The elections to fill expired regular terms or unexpired terms of councilors shall likewise be held at the last meeting of the House of Delegates of each annual session.

13. Former Article XII now Article XI. Section 2 shall be amended to read:

Section 2. The Council shall elect one of these members as editor of The Journal of The Kansas Medical Society and as chairman of the Editorial Board each year.

14. Former Article XIII now Article XII shall be amended to read:

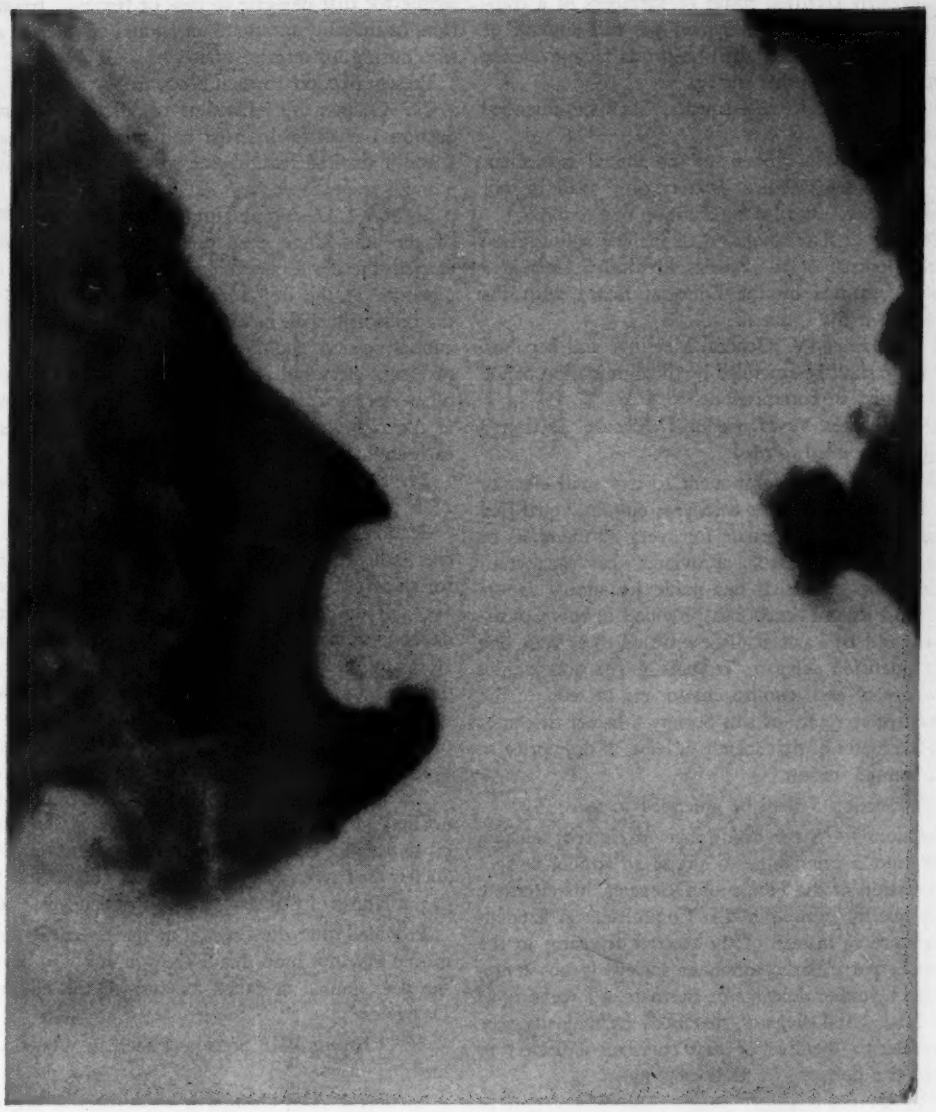
Funds of this Society shall be raised by an equal annual per capita assessment collected by each component society.

15. Former Article XV now Article XIV. The middle of Section 2 shall be amended by the deletion of the words "diligent and careful" and substituting therefore the word "proper."

Amendments to the By-Laws

16. Chapter I. Membership. Section 1 shall be amended to read:

Section 1. The name of a physician appearing on



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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

the properly certified roster of members of a component society which has paid the full amount of his annual assessment, shall be prima facie evidence of membership in this Society.

17. Chapter II. Assessments. Shall be amended to read:

Section 1. The amount of the annual assessment for the Kansas Medical Society only shall be not more than etc., and by the addition of Section 2.

Section 2. Assessments shall include subscription to the Journal of the Kansas Medical Society at a rate determined by the Editorial Board with the approval of the Council.

18. Chapter IV. General Meetings and Sections. Section 3 shall be amended by the elimination of the two words "or commissions."

19. Chapter V. House of Delegates. Section 3 shall be amended to read:

Section 3. Each component society shall elect to the House of Delegates each year one duly qualified delegate and one alternate for every 20 members or major fraction thereof: Provided, that each component society which has made its annual report and paid its assessments as provided in this Constitution and By-Laws shall be entitled to at least one duly qualified delegate. It shall be the duty of the secretary of each component society to send to the executive secretary of this Society a list of delegates and alternates of that society at least 30 days prior to each annual session.

20. Section 5 shall be amended to read:

Section 5. In the event that an elected delegate shall find it impossible to attend an annual or special session of the House of Delegates, his alternate shall qualify himself to the Committee on Credentials to serve instead of the elected delegate. In the event a particular component society is not represented by either delegate or alternate at a meeting of the House of Delegates, that body by majority vote may elect a member of that component society to serve as a delegate for that meeting.

21. Section 9 which details order of business of meetings of the House of Delegates shall be amended in the portion specifying the election of delegate-elect to the American Medical Association by the inclusion of an alternate for that position, making that portion read "delegate-elect and alternate to the American Medical Association."

22. Section 17. That portion which now reads: Alternate or alternates shall be elected each year for two-year terms, who may be certified to substitute for any delegate unable to attend an annual or interim session during his term of office, shall be deleted and a new Section 18 inserted to read:

Section 18. An alternate to the delegate-elect shall be elected each year who shall be certified to substitute for that delegate in case of removal, resignation, or inability to attend an annual or interim session during his term of office.

Present Section 18 then becomes Section 19.

23. Chapter VI. Election of Officers. A new Section 1 shall be inserted and present Sections 1, 2 and 3 shall be renumbered so as to be Sections 2, 3 and 4 respectively.

Section 1. A Nominating Committee consisting of the immediate past president, two councilors elected by the Council and two delegates in attendance at the last annual session, appointed by the president, shall meet at least 90 days before each annual session and nominate three candidates for president-elect and two or more candidates for each other elective office. Their report shall be presented at the first meeting of the House of Delegates of each annual session.

24. Section 2, becoming Section 3 if Amendment 23 is passed, shall be amended to read:

Section 3. All elections of officers shall be by secret ballot unless a single candidate is nominated for an office, whereupon the vote may be taken viva voce. If upon any ballot on more than two candidates no nominee shall receive a majority, the name receiving the smallest number of votes shall be dropped and the balloting continue in that manner until a majority is obtained. Nominations for all offices may be made from the floor in addition to the recommendations of a nominating committee.

25. Chapter VIII. The Council. Section 1, that portion which now reads: Provided, that the Council or the Executive Committee may not bind this Society in any way beyond the next annual meeting of the House of Delegates, shall be amended to read:

Provided, that the Council or the Executive Committee may not bind this Society in any way beyond the next annual or called meeting of the House of Delegates:

26. Chapter VIII, Section 4 shall be amended to read:

Section 4. The Council is authorized to organize and issue charters to single or multi-county component societies.

Present Section 5 which provides for district societies is hereby deleted. Section 6 is retained, Section 7 becomes Section 5 and Sections 8, 9 and 10 become Sections 7, 8 and 9 respectively.

27. Chapter VIII. Present Section 11 now becoming Section 10 shall be amended to read:

Section 10. In the event of a death, resignation, or removal in the office of second vice president, secretary, treasurer, or a councilor, the Council shall elect a successor to fill the vacancy. At the next annual meeting of the House of Delegates a caucus of delegates from the councilor district affected shall

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select a councilor to complete the regular three-year term. When such replacement term shall be for two or more years, the member selected shall be eligible to re-election for only one regular term.

28. Chapter VIII. Sections 12 and 13 becoming Sections 11 and 12 shall be condensed to form a new Section 11 to read:

Section 11. The Council shall meet at the conclusion of each annual session and at intervals during the year at the call of the president or on petition of five members of the Council. Adequate notice shall be given as to time and place.

29. Present Section 14 becomes Section 12. It shall be amended to read:

Section 12. Eleven members of the Council shall constitute a quorum.

30. Chapter VIII. Section 15 becoming Section 13 which designates the counties in each councilor district shall be amended at the request of Leavenworth County so that Leavenworth County is removed from the second district and re-assigned to the first district. The composition of all other districts remains as before.

31. Section 16 becomes Section 14.

Section 17 becoming Section 15 delineates the duties of councilors. This shall be amended by the addition of the following paragraph:

Each councilor shall be designated by the president as council representative to certain committees. He shall attend those committee meetings, reporting activities to the Council and when necessary secure Council approval of work undertaken or proposed.

32. Chapter XI. Committees. Section 1. Committees are alphabetically arranged and numbered consecutively. Present Committee on Insurance and Industrial Medicine, No. 29, shall be changed to the Committee on Industrial Medicine and becomes No. 21 and consecutive numbering of following committees is changed.

33. Chapter XI. Present Section 22. Committee on Medical Economics. Wording is amended to conform to present committee assignments as follows:

Section 22. The Committee on Medical Economics shall consist of a least five members. The duty of this committee shall be to investigate matters affecting the status of medical economics including indigent care, border line income conditions for medical care, accident, health and hospital insurance to individuals or groups and Social Security problems, etc. They shall advise the officers and the Council from time to time and the House of Delegates annually as to their findings and recommendations for means by which this Society as a whole, the component societies as units and the members as individuals may improve the economic status of the public and the medical profession. At least two members of this committee, one of whom is the retiring chairman, shall have served on the retiring committee.

Chapter XI. Present Section 29 to become Section 21 formerly known as the Committee on Insurance and Industrial Medicine shall be amended to read:

Section 21. The Committee on Industrial Medicine shall be composed of at least five members. It shall be the duty of this committee to study and become intimately acquainted with every movement agitated, proposed or attempted to enact or be enacted, that has for its object either secret or avowed the providing of industrial or compensation health, and/or accident medical insurance for public service or commercial employees of persons, companies or corporations either collectively or singly which affects the economic or financial status of the members of this Society, to represent this Society in efforts to secure greater cooperation and greater mutual understanding between medical men and employers of labor or their insurance carriers concerning the rendition of professional services in industrial cases and the amount and character of compensation therefore; to devise and advise whenever intelligent action on the part of this Society is desirable upon these questions and to report in writing its findings, recommendations and information obtained to this Society or to the House of Delegates. A portion of its members and whenever practical the retiring chairman, shall be included in its membership.

35. Chapter XII. Section 14 now reads: The secretary of each component society shall forward the assessment of that society, together with its roster of officers, members and list of non-affiliated physicians to the executive secretary on or before the first day of February of each year. Section 14 shall be amended by the addition of the following:

As a personal convenience to members desiring American Medical Association membership, the secretary of each component society may transmit through the central office of this Society individual checks or funds for membership assessments of that organization.

Advertisers in the Journal are carefully selected. Only those meeting our advertising standards may use the facilities of our pages. No advertisement will be accepted which, either by intent or inference would result in misleading the reader. May we suggest that you review the ads in each issue of the Journal and, when occasion arises to prescribe products featured or use the facilities offered, tell them you saw their ad in the Journal of the Kansas Medical Society.

50 and 3

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BLUE SHIELD

Physician Relations

In the spring of 1949, the councilors of the Kansas Medical Society were asked to appoint a physician from each councilor district as a representative to a state-wide Blue Shield Relations Committee. This committee was established and has functioned in a consistent program during the past year.

The Blue Shield Relations Committee serves as a two-way street of communications between the medical profession and the Blue Shield Board of Trustees. Its purpose is two-fold:

1. To broaden the base of understanding of the purposes and methods of operation of Blue Shield.

2. To provide physicians in all areas of the state with an orderly process for shaping the future policies of Blue Shield in line with the wishes of the majority of the profession.

The Blue Shield Relations Committee has not yet received official status as a regular committee of the Kansas Medical Society. However, it has functioned quite effectively so far in an informal capacity. The committee has held three statewide meetings and played an important role in shaping the recent changes in the Blue Shield contract.

Aside from these broad policy-shaping functions, however, the committee has expanded its activities to carry out the idea of the two-way street of communications. Already in five of the 12 councilor districts, members of the statewide committee have been responsible for setting up local district Blue Shield Relations Committees. Meetings of these local district committees have been held in Districts 1, 3, 6, 9 and 12.

What takes place in these district meetings? Perhaps the actual minutes of one of the meetings will show better than any other way the line of the discussion. It should be borne in mind that this is but the first round of meetings. All are agreed that a frequent exchange of ideas and information will lead to a better understanding of the many problems involved as well as to a better solution to many of these problems.

Minutes Blue Shield Relations Committee for District VI

Allis Hotel, Wichita, Sunday, January 15, 1950

Meetings was called to order at 12:30 p.m.

Purpose of Committee: Dr. Whitley called the meeting to order and outlined the purpose of the physician relations program. He pointed out that committees are being formed in each of the councilor districts of the Kansas Medical Society. The purpose of the committee for District VI is to bring about better communications between the doctors and Blue Shield in this area.

Inadequate Payments for Complicated Surgery: Dr. A. L. Ashmore opened the discussion by suggesting that the Blue Shield payments for difficult surgery were too low—or at least out of line. He compared the Blue Shield payment of $150 for a lobectomy with the payment of $100 for an appendectomy. It was the consensus that the difference in payment for these two procedures was not commensurate with the difference in the relative difficulties involved.

Specialist Problem: The discussion around this point led to some consideration of one of the main unsolved problems in the Blue Shield program, namely, the inability so far of Blue Shield to meet the charges of specialists in the various medical and surgical fields. Some of the questions on this problem:

1. How should specialists be determined?

2. What should the payment differential be?

Low Income Members: Dr. J. G. Kendrick said that several complaints had come to him from Wichita physicians to the effect that some Blue Shield members were claiming to be below income when they actually were not. Some of the doctors felt that the Blue Shield office was not handling these complaints properly. A new procedure has been developed by Blue Shield as a result of this complaint.

Cancellation Problem Discussed: Dr. Kendrick asked if it was true that for every four new members enrolled three are lost in cancellations. It was answered that the cancellation rate was not that high. The following new enrollment and cancellations for 1949 were reported: new members enrolled, 1949, 118,969; cancellations, 1949, 42,814. However, it was conceded that the cancellation problem is a serious one, general in all the Blue Shield Plans in the U. S.

Program Doesn't Yet Fit Kansas: Dr. Claypool felt that we had not yet found a program that fits Kansas. He said that the vast majority of Kansans live in towns below 2,500 population; that our program centers around the use of hospitals. In his own case the nearest hospital is 50 miles away. People resist the Blue Cross-Blue Shield approach because it is contingent on hospitalization.

Blue Shield Hurts Some Rural Doctors: This point brought to light the fact that Blue Cross-Blue Shield actually hurts the practice of some rural physicians. They stand to lose patients to other physicians who have hospital affiliations.

Rural Use of Hospitals High: Mr. Barham commented on Dr. Claypool's point to the effect that

in Mixed Bacterial Genitourinary Infections

Aureomycin is now rapidly becoming recognized as a drug of choice in the treatment of mixed bacterial genitourinary infections, particularly those in which *Escherichia coli* and *Aerobacter aerogenes* play a part. Intractability of a genitourinary infection is an especial indication for aureomycin.

Aureomycin has also been found highly effective for the control of the following infections: African tick-bite fever, acute amebiasis, bacterial and virus-like infections of the eye, bacteroides septicemia, boutonneuse fever, acute brucellosis, Gram-positive infections (including those caused by streptococci, staphylococci, and pneumococci), Gram-negative infections (including those caused by the *coli-aerogenes* group), granuloma inguinale, *H. influenzae* infections, lymphogranuloma venereum, peritonitis, primary atypical pneumonia, psittacosis (parrot fever), Q fever, rickettsialpox, Rocky Mountain spotted fever, subacute bacterial endocarditis resistant to penicillin, tularemia and typhus.

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our rural members use hospitals about 25 per cent more than our employed group members who mostly live in towns.

Recurrent Theme: Nevertheless, there has been a recurrent theme in all of our district meetings that the Blue Shield program still fails to meet some important objections of rural physicians. Repeatedly, there has been mention of the "catastrophic home illness," such as acute coronary, pneumonia, etc.

Blue Shield Payments About Two-Thirds the Average Charge: Dr. Wells asked what would happen if the participating physicians were polled on their opinions of the Blue Shield schedule of payments. In answer it was stated that a partial survey had been made through the State-wide Blue Shield Relations Committee. This survey indicated that the Blue Shield payments averaged about two-thirds of the prevailing charges throughout the state. However, there were variations in some areas sufficiently great to cause concern as to the adequacy of the Blue Shield program in meeting people's needs.

Meetings With County Medical Societies: Mr. Redd suggested that the next step in the physician relations program for District VI was a series of meetings with county medical societies. He said that the base of understanding of Blue Shield must be broadened to reach the individual physician. Members of the committee were asked to arrange for a Blue Shield staff member to speak briefly at a meeting of each county society in the district.

The meeting adjourned at 3:30 p.m.

Allergic Arthritis

For the last 40 years according to Dr. Jonathan Forman, president of the American College of Allergists, physicians throughout the world have from time to time found persons whose joints became swollen, hot, and painful following the eating of certain foods or taking certain drugs. While the number of these cases is by no means large, they are significant, Dr. Forman said.

He stresses the importance of the observations of Dr. Jerome Miller, Philadelphia, in the July-August issue of the Annals of Allergy, the official publication of The American College of Allergists. Dr. Miller in this article has collected the various reports on allergic arthritis which have appeared and added three new cases of his own.

Today many physicians are in agreement with Dr. Miller that at least certain types of arthritis are caused by an allergy to foods and that a certain number of patients with inflamed, painful joints give a history that they themselves or members of their family have had other allergies such as hay fever, sinus trouble, asthma, hives, eczema, or migraine headaches. Patients with any of these allergies who suffer from arthritis should suspect that the latter may be allergic in origin. Dr. Miller indicates the many laboratory tests which help to exclude causes other than allergy, as well as a few that help to identify the nature of the arthritis. When all this evidence has been correlated and sufficient proof is lacking that the arthritis is caused by some other factor, one is justified in using special elimination diets for identifying the offending food.

Plan for Confidential Birth Records

Details of a plan to protect birth records were released recently in a Children's Bureau publication, "The Confidential Nature of Birth Records." The plan was worked out by the American Association of Registration Executives and the Council on Vital Records and Vital Statistics.

Official endorsements of the plan have been received from the American Medical Association, the American Public Health Association, the Children's Bureau and the National Office of Vital Statistics.

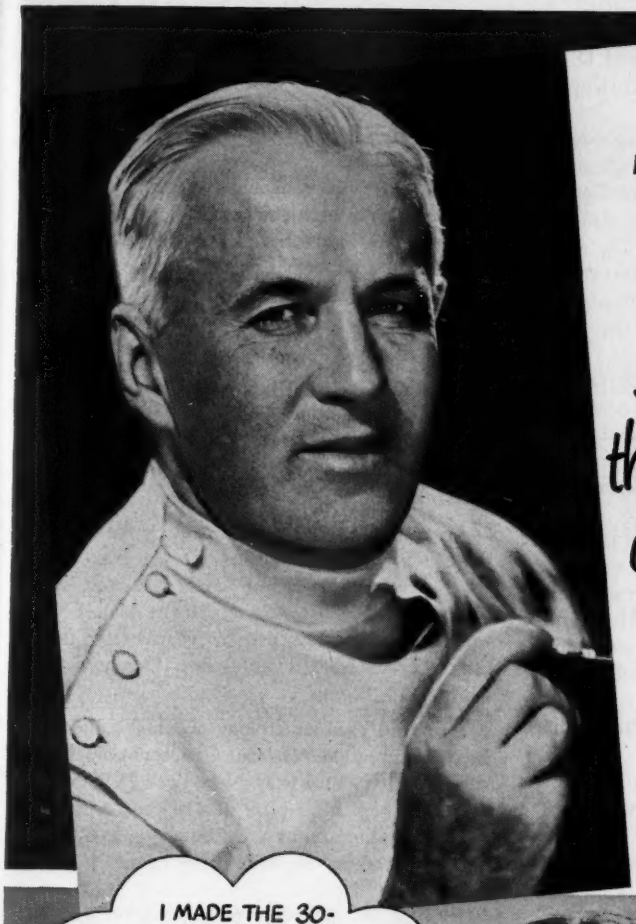
Designed to protect the privacy of all citizens, the recommended new practices will be of special benefit to children born out of wedlock, adopted children, or those whose parents happened to be in an institution at the time of the child's birth. Under the new proposal, only the person registered, his parents, accredited health and welfare agencies, or individuals authorized by court order would have access to data on the birth certificate customarily filed by doctors and other attendants at birth. The birth card provided each individual would show only the name, sex, date and place of birth and registration date.

A number of states have already instituted the use of birth cards, and others, including Kansas, will soon begin the use of the cards. These states have also adopted the standard certificate and have taken steps to keep their records confidential.

Length of Life Increases

The average length of life in the United States has increased to 67.2 years, according to a recent compilation of mortality statistics for 1948 by the National Office of Vital Statistics. This figure is 0.4 years above the 1947 average, computed from the death rates at the various ages.

In every age group the death rates for males are higher than those for females, and, except for the age groups over 75, they are higher for the non-white population than for the white population.



Throat Specialists report on 30-day test of Camel smokers:

"Not one single case of throat irritation due to smoking Camels"

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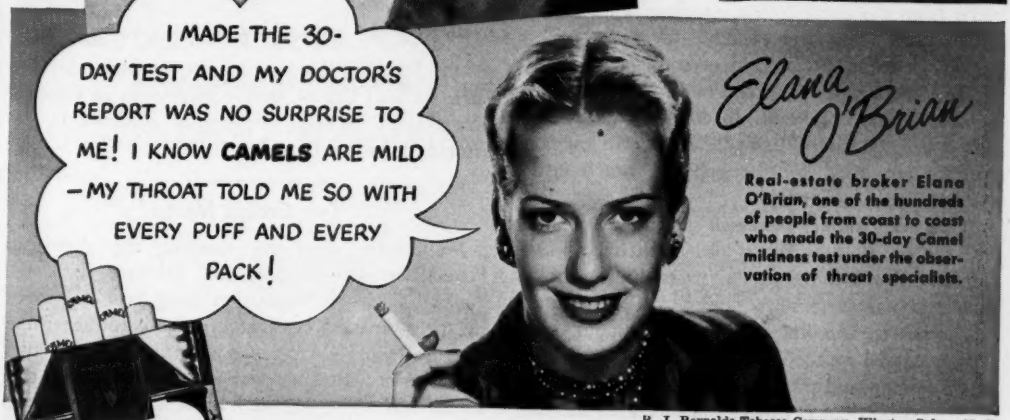
I MADE THE 30-DAY TEST AND MY DOCTOR'S REPORT WAS NO SURPRISE TO ME! I KNOW CAMELS ARE MILD—MY THROAT TOLD ME SO WITH EVERY PUFF AND EVERY PACK!
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MORE DOCTORS SMOKE CAMELS

than any other cigarette

Yes, doctors smoke for pleasure, too! In a nationwide survey, three independent research organizations asked 113,597 doctors what cigarette they smoked. The brand named most was Camel.

Warns Against Overfeeding Children

Children may be overfed vitamin A and D concentrates with a resukant poisoning and crippling, a New York doctor warned recently.

Dr. John Caffey of the College of Physicians and Surgeons, Columbia University, and the Babies Hospital in New York City, delivered the warning in a report at the 50th annual meeting of the American Roentgen Ray Society at Cincinnati. Dr. Caffey cites seven cases of infants and younger children being poisoned because of the overenthusiasm of mothers for vitamins and ignorance of the dangers of a high vitamin intake.

"The hazards of vitamin A poisoning from the routine feeding of vitamin concentrates A and D to healthy infants and children are considerably greater than the hazards of vitamin A deficiency in healthy infants and children not fed vitamin concentrates," he said.

He reported that toxic effects resulted from three types of vitamin A and D concentrates when taken in sufficiently large quantities and over a sufficiently long period. The chikdren suffered from painful swelling, particularly in the feet and arms. There was a limitation of motion and the children showed excessive irritability. Rapid recovery occurred when the feeding of the concentrates was discontinued. He said:

"Apparently it is not an uncommon practice for mothers to stop measuring vitamin concentrates accurately, drop by drop, soon after they start its use. To save time, the estimated dosage is poured directly from the bottle into a teaspoon. Under these circumstances the error of estimate appears to be invariably in the direction of overdosage.

"The parental reasons for giving toxic doses are interesting and important. In one case, the mother simply decided that if a smaller amount of the concentrate was good for the baby's bones a larger amount would be better.

"One grandmother increased the dosage to make sure she was doing a better job at prophylaxis than the mother was doing. In two cases the reasons for higher dosage were never satisfactorily explained. Apparently these mothers, ignorant of potential dangers, increased dosage in the blind belief that plenty of vitamins would promote the health of their children. In two instances dosage was increased and then toxic doses were continued in the hope of combatting and preventing upper respiratory infections.

"In another case, not reported in this group, the mother stated that her infant had developed such a fondness for the concentrate that she had to feed one teaspoonful daily to keep the baby satisfied. In another instance the mother was unwittingly feeding a concentrate instead of cod liver oil."

Dr. Caffey added that in no case was the overdosage due to erroneous advice by a physician or erroneous labeling of the bottle by the manufacturer. However, he urged manufacturers and pediatricians to warn mothers of the dangers of excess feeding.

He also told of the toxicity of polar bear liver to arctic travelers, Eskimos and their dogs, apparently the resuk of the high content of vitamin A. Several parties of explorers have been poisoned in this fashion and a number of deaths have been reported, he said.

Three Awards Announced

Three awards for medical writing were announced recently, one by the American College of Chest Physicians, the second by the National Gastroenterological Association, and the third by the Schering Corporation.

An award of $250 will be paid by the American College of Chest Physicians for the best original contribution on any phase of chest disease. Manuscrips may be submitted as late as May 1, 1950. Complete information may be secured from the secretary of the college, 500 North Dearborn Street, Chicago 10, Illinois.

Essays on gastroenterology or allied subjects will be accepted by the National Gastroenterological Association, 1819 Broadway, New York 23, New York, in competition for a prize of $100 and a certificate of merit. Manuscripts are limited to 5,000 words, and the deadline for submitting entries is June 1, 1950.

Cash awards of $1,000, $500 and $300 are offered by the Schering Corporation for the best essays on "The Clinical Use of Steroid Hormones in Cancer." The contest is open to medical students in the United States and Canada.

Two Groups Merge

Preliminary steps for merging the American Foundation for High Blood Pressure with the American Heart Association have been approved by the boards of both groups in recent meetings. The staffs of both groups will undertake a joint study to recommend methods of integrating personnel and operations, and when such arrangements have been mutually approved the Foundation will dissolve.

The high blood pressure group will become a section of the American Heart Association's Scientific Council and will be known as the Council for High Blood Pressure Research. Other sections now within the Association are the Section on Circulation and the American Council on Rheumatic Fever.

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ABSTRACTS FROM CURRENT LITERATURE

Pulmonary Embolism

Pulmonary Embolism, its Incidence, Significance, and Relation to Antecedent Vein Disease. By Leo M. Zimmermann et al, S.G.O., 88: 373, March 1949.

On the basis of 5,588 autopsies the incidence of fatal pulmonary embolism was 77, or one in 2,000 major operations (0.05 per cent). This is in contrast with figures from the Massachusetts General Hospital where Dr. A. W. Allen reports 26 cases of fatal pulmonary embolism in 458 major operations, (5.6 per cent), about 100 times as frequent.

They note that the incidence of pulmonary embolism from thrombophlebitis is rare. "Fatal emboli are almost always the result of a phlebothrombosis and almost invariably arise from the veins of the lower extremities."

Their management includes ligation of the superficial femoral vein, unilaterally for unilateral signs of phlebothrombosis, or bilaterally if the findings so indicate, or in the presence of embolism without leg findings. This reviewer would raise the question of phlebothrombosis of the pelvic veins in such an instance.

Anticoagulant therapy, including both heparin and dicumarol, is employed both after ligation and in cases of phlebitis, ligation not being done here. This is to prevent super-imposed phlebothrombosis and embolism.

Early exercise, after thrombosis is evident, is used along with the foregoing treatment, and elastic bandages are employed.—*T.P.B.*

* * *

Methemoglobinemia

Methemoglobinemia. By G. W. Walliker and E. H. Baxter, Arch. Ped., 66:4, 143-156, April, 1949.

Methemoglobinemia is an alarming condition and can rapidly lead to death unless the etiology of the cyanosis is suspected. It may result from the ingestion, inhalation, or absorption through the skin of the following substances: potassium chlorate, bismuth subnitrate, sulfonamides, antigas ointment, crayons, well water containing nitrates, aniline, nitrobenzene, acetanilide, aminophenols, antipyrin, ferricyanides, shoe dyes, perfumery, artificial flavorings, acetophenacetin, plasmochin, phenylhydrazine, sulfonal, pyrogallic acid and methylene blue. Cases of familial idiopathic methemoglobinemia have been reported.

Generally the diagnosis is not made until the cyanosis fails to disappear under oxygen therapy, or the chocolate color of the blood is noted on examination. By the spectroscopic examination of the blood the presence of an absorption band in the red region of the spectrun can be dissipated by the addition of cyanide or alkali.

Methylene blue should be given intravenously for rapid effect, the recommended dosage being 1.5 to 3.0 mg. per kg of body weight. Frequently higher dosage is necessary. The drug can be used orally as an adjunct to parenteral therapy. The oral route is only one-tenth as effective.—*D.R.D.*

* * *

Suture of Peripheral Nerves

Suture of Peripheral Nerves. By John W. Kirklin, Francis Murphey and Joseph Berkson, S.G.O., 88:6, 719-730.

Report is made on a series of 2,849 military patients who had 3,276 injuries to peripheral nerves. Analysis of results with respect to recovery of motor and sensory function reveals that best results are obtained when an injured nerve is sutured within three months after injury and that a reasonable amount of recovery may be expected when operation is performed within nine months. Results that are inferior, but in some instances worthwhile, may be expected in cases coming to surgery 10 to 15 months after injury.

Recovery is better in the larger muscles than in the small muscles such as those in the hand, and it is in the latter group that early repair is most important.

Complete recovery is rare under any circumstances.

End-to-end anastomosis is preferable to nerve grafts. No advantage is found in wrapping the anastomosis in tantalum foil. Some improvement is to be noted from nearly every nerve suture, and this should encourage the surgeon to attempt repair, even against serious odds.—*T.P.B.*

Grant for Study of Water Pollution

Kansas has received a federal grant of $13,697 for studies of water pollution resulting from industrial wastes, according to a recent release from the Federal Security Agency. This is part of a total of $891,487 allowed to state and inter-state agencies for a nation-wide study.

Health education and health services go hand in hand. Singly, they cannot do an effective job. Together, they complement each other and form an invaluable adjunct in the over-all health program. Health education without opportunities for medical consultation is sterile. Likewise, medical services exist in a vacuum unless they are called to the attention of the people. *Tula Salpas, USPHS, Indust. Hyg. Newsletter, Aug., 1949.*

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February 20-21—Tenth Annual Congress on Industrial Health, Roosevelt Hotel, New York City.

February 20-23—Scientific Assembly, American Academy of General Practice, Kiel Auditorium, St. Louis, Missouri. Reservations Accepted to January 16. Address Hotels Reservation Bureau, A.A.G.P., 1420 Syndicate Trust Building, St. Louis 1, Missouri.

March 9-11 — Scientific Session, American Goiter Association, Shamrock Hotel, Houston, Texas.

March 26-30—Pan-American Association of Ophthalmology, Miami Beach, Florida. Conference of National Society for Prevention of Blindness in Conjunction. Headquarters at Floridian Hotel, Miami Beach.

April 3-8—Postgraduate Assembly on Endocrinology and Diabetes, Roney Plaza Hotel, Miami Beach, Florida. Sponsored by American Diabetes Association and Association for Study of Internal Secretions.

May 14-19—International and Fourth American Congress on Obstetrics and Gynecology, New York, New York.

MAY 15-18—91st ANNUAL SESSION, KANSAS MEDICAL SOCIETY, WICHITA, KANSAS.

June 26-30—Annual Session, American Medical Association, San Francisco, California.

August 28-September 1—Annual Scientific and Clinical Session, American Congress of Physical Medicine, Hotel Statler, Boston, Massachusetts. Full information from American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

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GORDON F. HARKNESS, M.D., Otolaryngologist, Davenport, Ia.; Past Vice-President, American Academy of Ophthalmology & Otolaryngology.
PETER C. KRONFIELD, M.D., Professor of Ophthalmology, University of Illinois School of Medicine, Chicago.
JOHN McLEOD, M.D., Ophthalmologist, Kansas City, Mo.
CECIL S. O'BRIEN, M.D., Former Professor of Ophthalmology, University of Iowa School of Medicine, Iowa City.
G. O. PROUD, M.D., Instructor in Otolaryngology, Washington University, St. Louis.
AUBREY G. RAWLINS, M.D., Clinical Professor of Otolaryngology, Leland Stanford University School of Medicine, San Francisco.
HENRY LANE WILLIAMS, M.D., Section on Otolaryngology, Mayo Clinic; Professor of Otolaryngology, University of Minnesota Graduate School, Rochester.

University of Kansas Faculty:

GRAHAM ASHER, M.D., Associate Professor of Medicine.
WILLIAM B. BARRY, M.D., Instructor in Otorhinolaryngology.
JOHN A. BILLINGSLEY, M.D., Associate Professor of Ophthalmology.
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SUBJECTS TO BE DISCUSSED

The Hearing and Speech Problems of Today.
Technical Procedures of Value in Practice.
Treatment of Nasal Fractures—New and Old.
Tobacco Intoxication.
Signs, Syndromes, Triads in Private Otolaryngologic Practice.
Fundamentals of Allergy.
Otitis Media With Effusion.
Tonsillectomy—A More Radical Concept.
Specific Medical Treatment of Allergy.
Headaches.
Diagnosis in Nasal Allergy (Including Skin Tests).
The Doctor's Heart and Related Vascular Diseases.
The Differential Diagnosis and Treatment of Headache From the Ear, Nose and Throat Standpoint.
Continuation of Signs, Syndromes, Triads in Otolaryngologic Practice and the Status of Antihistaminic Drugs.
The Management of Acute Laryngo-Tracheo-Bronch't's.
Sodium Pentothal as an Anesthetic for Tonsillectomies (Colored Motion Pictures).
Malignancies of Nasal Sinuses and Their Management.
Radioisotopes in Cancer.
Otolaryngological Surgery—Fifth Floor Surgical Section.
Helpful Office Procedures and Useful Drugs in Otolaryngology.
Physiologic Phenomena Misinterpreted as Nasal Disease.
Tumors of the Nasopharynx.
The Otolaryngologist in His Office.
Management of Industrial Eye Injuries.
Common External Eye Diseases.
Indications for Cataract Surgery.
Radiation Therapy in Ophthalmology.
Beta Radiation in Ophthalmology.
Diagnosis of Glaucoma.
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X-Ray Localization of Foreign Bodies.
Management of Post-Operative Complications of Cataract Surgery.
Neurology in Relation to Ophthalmology.
Presbyopic Aids and Visual Aids.
Management of the Glaucoma Patient.

BOOK REVIEWS

Medical State Board Questions and Answers. By R. Max Goepp and Harrison F. Flippin. Published by W. B. Saunders Company, Philadelphia. 663 pages. Price $7.00.

This book which has proven to be so useful for many classes of graduating medical students continues to have much of value and much to recommend it. The original author has been fortunate in acquiring the services of Dr. Harrison Flippin, which will certainly guarantee a continuing high calibre.

Much of the book has been rewritten, particularly those parts relating to therapeutics, which has been made necessary as a result of the rapid recent advances in this field.

All in all, the book can be recommended for the purposes which it is designed to service, namely a review for purposes of preparing for state board examinations.—*F.D.M.*

* * *

Clinical Pathology. By Benjamin B. Wells. Published by W. B. Saunders Company, Philadelphia. 397 pages, 31 illustrative figures, 38 tabulated clinical summaries. Price $6.00.

A natural and logical arrangement of clinical pathologic methods with emphasis on interpretation and application is presented in sections as follows: infectious diseases, diseases of the gastrointestinal tract, diseases of the respiratory system, diseases of the kidney and urinary tract, diseases of the blood, diseases of the cardiovascular system and metabolic and endocrine disorders.

Throughout the book the many laboratory tests are evaluated concisely in an interesting and easily understood fashion without tiresome bibliographies or unimportant minutiae sidetracting the reader. It is not meant to be a reference type textbook or a laboratory manual of procedures, but rather a practical interpretative and applicative work for the laboratory, physician's office, and for study by both medical students and consultants.

This is a book that offers deliverance of the physician from the morass of confusion so often plaguing him when confronted with interpretation of clinical laboratory data at hand; also his plan of attack in a given case of disease may be more quickly and intelligently formulated with the aid offered in the form of summary tables. Of special benefit to the surgeon and obstetrician are two appended chapters on clinical laboratory studies in surgery and obstetrics written by the author with the assistance of Dr. A. E. Moon.—*W.M.W.*

* * *

Mitchell-Nelson Textbook of Pediatrics. By Waldo E. Nelson. Published by W. B. Saunders Company, Philadelphia, 1950. 1658 pages, 425 illustrations, 120 tables. Price $11.50.

The new fifth edition of the Mitchell-Nelson Textbook of Pediatrics is a top-notch edition. The contributors are experts in their fields and the book is lucidly written and well illustrated. The references at the end of the chapters are up to date and include all the important reference material. This book can be highly recommended to the practitioner and student alike.—*H.C.M.*

Federal Assistance for Hospital Construction

A sliding scale instead of the flat one-third contribution in federal funds available since 1947 under the Hospital Survey and Construction Act for the construction of local hospitals has been adopted by four states. Forty-two have chosen the fixed rate of federal aid, with an average for all fixed percentage states of 47 per cent. Kansas, in this classification, receives a percentage of 40. Several states and territories have not decided on the method to be used.

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Index to Advertisers

Abbott Laboratories XI
American Meat Institute VIII
American Optical Company 165
Ayerst, McKenna and Harrison, Ltd. Inside back cover
Borden Company IX
Brown School XVIII
Coca-Cola Company XVII
Cook County Graduate School of Medicine.... XVIII
Duncan Laboratories VII
Goetze Niemer Company 163
Hanicke, P. W., Manufacturing Company..... XVI
Holland-Rantos Company 161
Lattimore-Fink Laboratories XV
Lederle Laboratories, Inc. 157
Lilly, Eli, and Company .....Facing XVIII
Major Clinic XIV
Mead Johnson and Company .....Back cover
Medical Protective Company XVIII
Merck and Company, Inc. X
Midland Finance Corporation 167
Munns Medical Supply Company, Inc..... 164
Nestle Company, Inc. (Food Sales) XV
Neurological Hospital Association 168
Parke, Davis and Company. Inside front cover and III
Philip Morris and Company VI
Physicians Casualty Association XVI
Producers Creamery Company 168
Quincy X-ray and Radium Laboratories..... XVIII
Quinton-Duffens Optical Company 167
Ralph Sanitarium 155
Rexair Division, Martin-Parry Corporation XIII
Reynolds, R. J., Tobacco Company 159
Sandoz Pharmaceuticals, Inc. XVII
Schering Corporation 153
Searle, G. D., and Company 151
Smith-Dorsey Company XIV
Southwest Scientific Corporation XVIII
Spencer Road Sanitarium XVI
Trowbridge Training School 166
University of Kansas Medical Center .....164 and 165
Washington University School of Medicine 167
Winthrop-Stearns, Inc. V
Woodcroft Hospital XIII
Wyeth, Inc. 163
Zemmer Company 164

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